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Effect of Stock Market Inflation on Public Service Rates

Like all other business concerns, telephone companies are keenly interested in increasing their revenue. This subject will receive much attention at the coming Chicago telephone convention, as leaders of the industry realize its growing importance at this time. The greatest increase in telephone earnings, they believe, in the future will come from other than exchange revenue. An expansion of toll volume and the development of various by-products of the telephone business are expected to offer the best means of increasing company receipts.

In the present situation most companies do not expect their greatest growth in earnings to come from increased profits from exchange business. Rates will not advance in the next few years as they did during and immediately after the war.

Growth in population will add telephone stations, of course, but there is a disposition on the part of regulatory authorities, generally speaking, to frown on rate increases. Some commissions, in fact, are compelling service companies to show cause why the present rates should not be reduced.

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One of the reasons for this is the prominent place in the limelight that utility companies are occupying in the recent boom in stock market prices. Steel, oil, railroads and most other industries have had to take a back seat in the Wall Street flurry over high-priced stocks. The public service companies, with their mergers and gigantic holding organizations, have led the procession in recent months, and the rate-makers have taken due notice of this development.

Day after day the phrase "Utilities lead the market," has headlined the stock reports, and the conclusion is drawn that liberal rates is the reason. As a matter of fact, it is not a sound conclusion, and certainly it is not a sound argument for a rate reduction.

The cold truth is that in the orgy of stock speculation many stocks of all kinds have been boosted to a price that represents from 30 to 50 times their earnings, which means 2 or 3 per cent. At their regular dividend rate these stocks in many cases pay less than 2 per cent.

Having stimulated this inflation, the speculators have looked over into the utility field, observed that regulation guarantees service companies a "reasonable return" on their investment, and then the market manipulators compared this yield of 6 or 7 per cent with the low yield of the sky-rocketed securities with which they have been playing. The utility field looked good to them, and the result has been the featuring of utility stocks with the unpleasant effect of making some commissions ask if rates are not too high.

* * * *

Therefore, if telephone rates, speaking generally, cannot be advanced progressive companies will seek other means to increase their revenues. It is a subject that will receive much consideration at all telephone conventions during the coming months.

State associations are urging their member companies to increase their income by building up their toll business. There is a public need for more long distance service, and the company that keeps its plant in shape to afford good transmission and educates its subscribers to make use of its facilities will reap the benefit. The telephone association that gets this idea across to its members is doing an important work for the industry.

* * * *

In the October bulletin of the Illinois Telephone Association, Secretary A. J. Parsons asks the question, "Have we got competition?" and then answers it as follows:

"More efficient methods are being introduced into the Postoffice Department; air mail is being used extensively, and the postal service in general is being speeded up. The telegraph companies are not asleep and as a result the telegraph service is better than it formerly was—all of which means that there is real competition for the communicating public's dollar.

We know it is cheaper in many cases to use the telephone than it is to write or telegraph, because of the fact that a greater amount of business can be transacted in a telephone conversation where the answer is immediately available, than can be transacted by mail or telegraph where the answer must be awaited. You know this is true, but do your subscribers

know it? Why not tell them in your next newspaper advertisement?"

* * * *

In order to obtain a fair deal for telephone companies, TELEPHONY has often called attention to the fact that while increased volume of business means larger profits for most utilities, the same conditions do not apply to the telephone industry. Though not generally recognized, the peculiarity of the telephone business is that additional subscribers usually mean increased expense, rather than increased profits, unless the rate situation is adjusted to meet operating conditions.

Along the same line an article in the publication, Automatic Telephone, has this to say:

"One of the inherent advantages possessed by many classes of public utilities —notably the light and power industry—is that expansion, if wisely conducted, is normally attended with economy in operation and smaller unit capital investment. In this respect such utilities may be compared with large manufacturing establishments, which are able to take advantage of economies offered by mass production.

It is an unfortunate circumstance, but an unavoidable one, that the telephone business is not only devoid of this advantage, but, on the contrary, has the disadvantage that growth is invariably attended with higher unit investment costs as well as greater unit cost of operation.

* * * *

"To any man familiar with telephone affairs, the reason for the difference is obvious. The largest part of any telephone company's investment lies in its line construction, the cost of which mounts far more rapidly than the number of stations served. That the cost of operation per call grows is evident to any student of telephone engineering.

Unfortunately, these things are not as well known to the telephone users, who are called upon to pay higher and higher rates for telephone service as the size of the exchange grows. Nor can they be explained in a very satisfactory manner. The public is prone to look upon technical explanations—which they can understand only imperfectly, if at all—as being propaganda for unwarranted rate increases.

In the great majority of cases, we know —and the public utility commissions as a rule know—that the periodic rate increases are necessary for the healthful progress of a telephone company. But it is frequently difficult to convince the public of this necessity, especially in the face of the downward, or at least stationary, trend of light and power rates.

At least one way has been found of combating this situation with a fair degree of success. This is by raising the standards of service to such a degree that opposition to the plans of the telephone company is reduced to a negligible point."

As frequently stated in these columns, it is wise tactics for the company seeking a rate adjustment to lay great emphasis on the point that the increased revenue is to be used to give the telephone users better service.

* * * *

An odd circumstance of the demonstration last week of the 'round-the-world (New York to Sydney, Australia) radiophone circuit was that it was September 30 in America and October 1 "over there" when the messages were exchanged. The circuit was 15,000 miles long, starting in New York, to London via a short wave channel, and then on to Australia. One of TELEPHONY'S staff was in New York and participated in the demonstration.

It was 4 o'clock in the afternoon of September 30 when a voice in New York sent the greeting to Sydney, but because of the difference in time it was 6 o'clock in the morning of October 1 in Australia. At the close of the conversation New York said "Good night," and Sydney's reply was "Good morning."

It required but 30 seconds to put through the call, but the 14 hours' difference in time is expected to prove an obstacle to the general commercial use of the service.

COMING CONVENTIONS.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 22, 23, 24 and 25.

Independent Pioneer Telephone Association of United States, Stevens Hotel, Chicago, October 24.

Illinois Telephone Association, Springfield, Hotel Abraham Lincoln, November 20 and 21.

Missouri Telephone Association, Hotel President, Kansas City, November 13 and 14.

Canadian Independent Telephone Association, Hotel Carls-Rite, Toronto, November 26 and 27.

South Dakota Telephone Association, Watertown, Hotel Lincoln, January 14, 15 and 16.

Informing Farmer Concerning Service

Little Understanding Among Many People in Rural Territory of Simple Telephone Problems—Plan of Northwestern Bell Company in its Norfolk, Neb., District For Acquainting Public With Facts Regarding Operation of Business

By C. L. Pickett,

Manager, Northwestern Bell Telephone Co., Norfolk, Neb.

The need of a better understanding on the part of the public of the problems and practices of the telephone company has long been recognized, but how to bring that about and more particularly among the rural patrons has been the problem.

Among a great many people there is little understanding of the comparatively simple things such as: What operations have to be performed by the operator in answering a call, what the effect is of ringing off or not doing so, why the calling subscriber sometimes gets a wrong number, what means are taken to provide service during the slack hours of the night.

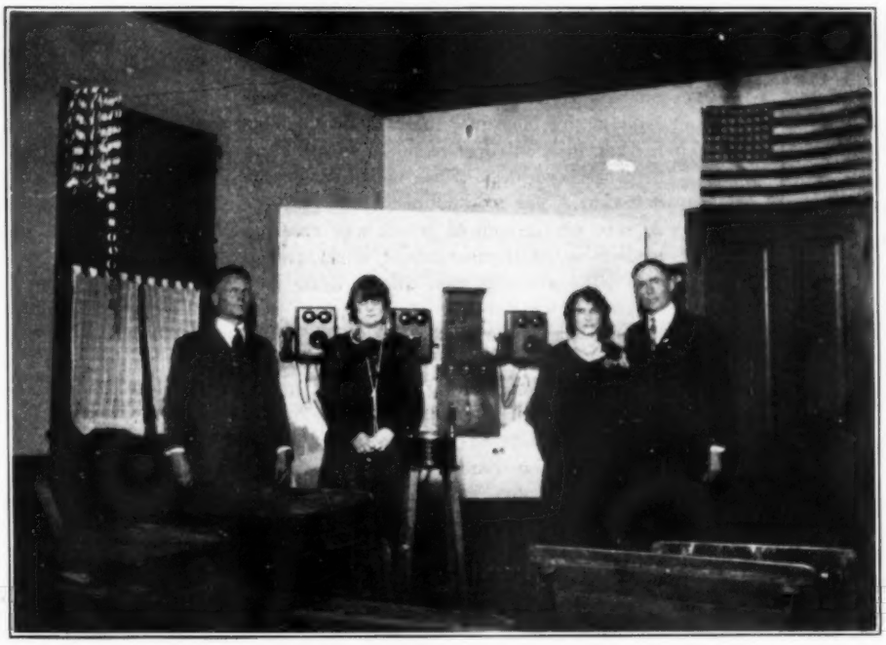
The bad effect of listening-in on others' calls; why the line is reported busy sometimes, when trying to call a party-line subscriber, and later that subscriber reports he was not using his telephone, the reason for sometimes being cut-off while talking—these are other things which need explaining often.

Then, too, there is all too little understanding of the more complicated problems of toll classification and how to use them to the best advantage, how toll calls are handled, timed and rated, how corporations are financed, what of construction financing, the reason for the depreciation account, etc.

The discussion of these and similar fundamental questions has been done more or less at all times, but the main result has been with the town subscriber rather than the country. "Open House Days" and

"Open House Weeks" have been tried with good results, too, particularly with the town subscribers, so again that does not reach the people most desired.

Programs of various kinds have been given which are also good, but the result again was largely with the town people. With these thoughts in mind a plan was worked out in the Norfolk district of the Northwestern Bell Telephone Co. whereby a start could be made toward making more general the facts regarding our business.



Equipment Set Up and Everything Ready for Commencing the Program in a Country School Near Wayne, Neb. Representatives of Northwestern Bell Telephone Co., Left to Right, Are: O. L. Randall, Wayne; Zeldamae Cook, Demonstration Board Operator, Wayne; Grace Hickok, Chief Operator, South Sioux City, and C. L. Pickett.

The plan was to prepare a program to bring out discussions, make it interesting and take it out to the farmer patrons. It was thought that the novelty of such a program would appeal to the school authorities because, as one school head remarked: "There is not half the telephone subscribers who know how to use a telephone."

The first step then was to form an idea of what such an entertainment should consist and see what the school superintendents in the various counties would think of the idea. It did not require much time or effort to convince them that the plan was educational and worthy of trial, and armed with this assurance, the rural school teachers and boards were next interviewed.

To them the plan was explained, and they were told that on the night of some school day an educational telephone entertainment would be brought to their school, and that the scholars and their parents would be invited to a free show. Of course, curiosity had a considerable part in the acceptance of our offer because, as one teacher asked, "Why should the telephone company give us a program when it has nothing to sell?"

The idea took with them generally to such an extent that more dates could be made than it would be possible to fill. After beginning a series of programs in a community, we were often beseiged by those in surrounding school districts to come over to their neighborhood and give them a program. In one instance we were promised a community hall in which the program could be held with an audience of 200 or more. It is needless to say that there were good crowds.

The means by which the series was put on in the country were: One of the construction trucks was fitted out with the demonstration board in its case, a farm lighting plant to light the building and furnish current for the projector, and a portable projector with films and slides. The whole outfit was driven up to the schoolhouse shortly before school was out (to better advertise the program). Then after school was dismissed, the equipment was carried in, the wire from the light plant run through a window or door, a circuit run along the ceiling on screw hooks with light fixtures at intervals to light up the room, the demonstration board set up, the screen hung, projector set up, and then the show was ready.

The demonstration operator and such local operators as could attend would come out about the time for the program to start.

The program as it was finally planned was, first, to have the local telephone manager give a little talk as to why we were there, and drop a few facts for the audience to consider, then introduce the operator who had been trained to demonstrate how calls are handled, or "What Happens When You Call Central."

This was done by means of a demonstration board upon which were mounted three telephones and a small part of a switchboard with drops, cords, plugs, keys and generator. This equipment was connected up and was a complete exchange of three stations. For common battery ex-

Motor Truck of Northwestern Bell Telephone Co. Loaded with Demonstration Board, Motion Picture Machine, Farm Power & Light Plant, Ready for Trip to Country School—How Demonstration Board and Equipment Were Loaded in "Moving Picture Wagon."

changes, another board with lamp signals and standard common battery equipment was used, in which case the talk would be made to fit the operation of that kind of system.

The various problems of operating a board were discussed and explained. A few examples of how some calls were put through by thoughtless patrons made a little comedy for the amusement of the audience. This required three or four other employes who acted the parts of the thoughtless patrons.

The operator's lecture filled the space of about a half-hour, after which there would be a lecture on some phase of the business illustrated by moving pictures or slides. There is great possibility in this part of the program. The history of the telephone business, some interesting features of telephone use and customs in foreign countries, problems of manufacturing the equipment or some of the later development of telephone research, all make interesting stories when illustrated. There was enough comedy interspersed to prevent the program becoming dry or uninteresting.

At the close we always planned to give the audience a chance to ask questions and discuss such parts of the program as they wished, to inspect the demonstration board, etc. We also gave a special invitation for them to visit the exchange to see where their line came in on the switchboard, and how the calls were handled on the real board.

This entire program would take about an hour and a half, and the open forum a half hour or so. Often some leader of the community would make a speech of appreciation or propose a vote of thanks for the entertainment. Sometimes the teacher or patrons would serve coffee and sandwiches for the crowd. Such mingling of the telephone folks and their patrons goes a long way toward establishing the best of relations.

In a little over a year we had 43 such programs, giving them five nights in one week in the territory around one exchange and then moving on to some other exchange for the next week. The average attendance at these meetings was 63, and we had as high as 202 people. When one considers that these are the best and most substantial people of the community—the telephone users—and that the rural districts are where this information is needed and the pupils of the school grades are to be our subscribers in a short time, the benefits of such public activity are probably beyond all possible estimates.

The result of the programs began to be manifest at once. The next day after a program in a community, the operators would note better cooperation by the subscribers in such matters as ringing-off, calling by number, more courtesy over the line, etc.

Another mark of the favor with which such programs were received was shown by the eagerness of those who had previously seen one of the programs, in their request for one at their school. One teacher insisted that we put on a program in her school, even if we had to do in the day time. She was so persistent that the consent of the school board was received to dismiss the regular school work at noon and make an afternoon affair of it. So, of course, we did it.

This necessitated darkening the windows with building paper, in addition to the ordinary work of setting up the equipment; but the enthusiasm with which the pupils and parents entered into the affair was a good indication that the desired result was secured. At the close the director of the school thanked us most heartily for the instructive and educational nature of the program.

Many teachers required their pupils to take notes and prepare papers as part of the school work the next day.

In consideration of the result already obtained and the cumulative results expected over the years during which those pupils grow up, the series is thought to justify all the expense that it cost many times over.

Arrangements and Features of Coming National Convention.

In a letter going out to the Independent companies from the United States Independent Telephone Association calling attention to the reduced rates granted to those attending the annual convention of the association to be held at the Hotel Stevens, Chicago, October 22 to 25, special mention is made of the fact that the week of October 21 will be an unusually interesting one in Chicago.

The electric societies will be celebrating "Edison Week," commemorating the 50th anniversary of the discovery of the incandescent lamp. An immense electric sign 150 feet high has been erected in the lake front park and will be illuminated nightly. The famous Buckingham fountain will be playing every night by special arrangement. The downtown district of the city will be beautifully illuminated.

Another attraction will be the annual radio show to be held in the Coliseum, the immense exhibit hall that is within walking distance of the Stevens Hotel. This is the annual radio show open to the public which attracts thousands nightly and where one can see all of the very latest developments in connection with radio.

The telephone convention in itself will offer unusual attractions in its new headquarters at the Stevens Hotel. Fifty-one manufacturers have taken space in the large exhibit hall, so there will be a great diversity of exhibits. A most interesting program has been arranged, centering upon a discussion of securing more business and making a larger profit. The slogan of this convention is "Meetings for Profit."

On account of the unusual number of visitors who will be in Chicago during the convention week, those who are planning to attend the telephone convention are urged to make their reservations with the hotels at once and arrange early for the railroad certificates that entitle them to the reduced rates.

The Independent Pioneer Telephone Association of United States has prepared what is thought to be the finest entertainment yet offered. The grand ballroom of the Hotel Stevens, with its almost perfect acoustics, assures everyone who attends the Pioneer luncheon that he will be able to hear every number on the program no matter in what part of the hall he may be seated. Everything points to a great convention.

Pioneers to Have Big Meeting During National Convention.

The ninth annual convention of the Independent Pioneer Telephone Association of the United States will be held at the Hotel Stevens, Chicago, October 24. This is the third day during the convention of the United States Independent Telephone Association, held October 22 to 25 inclusive.

On the morning of that day the Independent Pioneers will have a business session, followed by an address by Frederick A. Landis of Indiana. Mr. Landis is nationally known as a speaker and entertainer. Immediately following the forenoon session is the annual banquet and entertainment of the association. The entertainment committee has been actively planning for this event the past several weeks and believes that a wonderfully interesting program will result.

"Be sure and bring your service badge, as badges will only be provided for new members," says Secretary-Treasurer J. K. Johnston, of Indianapolis, Ind. "Come early and get your roster. Help make this a banner 'Pioneer Day.'"

Prices in the Metal Markets.

New York, October 7—Copper—Steady; electrolytic, spot and future, 18c. Iron—Steady; No. 2 f.o.b. eastern Pennsylvania, $20.50@21.50; Buffalo, $17.50@18.50; Alabama, $13@14.50. Lead—Steady; spot, New York, 6.90c; East St. Louis, 6.70c. Tin—Steady; spot, $43.87; future, $44.50. Zinc—Steady; East St. Louis, spot and future, 6.80c. Antimony—8.50c. Quicksilver—$124.

Missouri Association Holds Annual Convention in November.

The Missouri Telephone Association has announced that its 1929 convention will be held at the Hotel President, in Kansas City on Wednesday and Thursday, November 13 and 14. R. W. Hedrick, of Jefferson City is secretary and in charge of the program.

The Location of Telephone Cable Faults

Theory of Wheatstone Bridge Circuit and Explanation of Its Use as Testing Arrangement for Measuring Resistance—Description of "Varley" and "Murray" Loop Methods Used for Location of Faults in Telephone Circuits—Part II

By B. C. Burden,
Lincoln Telephone & Telegraph Co., Lincoln, Neb.

The Wheatstone bridge is a testing arrangement whose primary purpose is for the measuring of resistance, although various modifications of it enable the measurement of capacity, inductance, as well as its use in both radio and telephone circuits.

The Wheatstone bridge consists essentially of three variable resistance networks together with a sensitive galvanometer and a direct current source.

The commercial sets, in addition to these essential elements, are equipped with suitable keys and binding posts for cutting the galvanometer in and out of circuit, and for changing the internal connections of the sets for various tests. Provision is also made to cut-in resistance shunts across the galvanometer in order to prevent violent fluctuation during the preliminary balancing of the bridge.

Fig. 5 illustrates the schematic wiring and arrangement of the Wheatstone bridge fundamental circuit. It will be noted that the bridge has four "arms" which are commonly designated as the *A*, *B*, *R*, and *X* arms.

On most bridges, the *A* and *B* arms are arranged to be variable from 0 to 1,000 ohms in steps of 1, 10, 100, 1,000 ohms. The *A* and *B* arms are known as the "ratio arms." The *X* arm is provided with binding posts to which the resistance to be measured is connected.

The bridge operates in the following manner: Referring to Fig. 5, if arms *A* and *B* are set for the same resistance and the rheostat arm is adjusted to the same value as the resistance in the unknown arm,

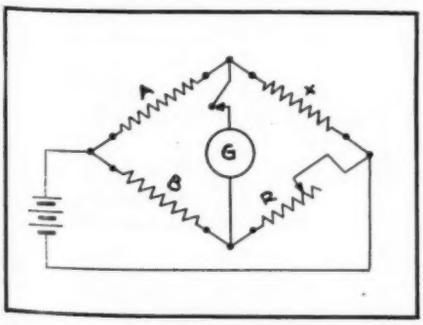


Fig. 5. Fundamental Wheatstone Bridge Circuit.

X then the voltage across the galvanometer will be zero and the needle will not be deflected.

The reason that the voltage across the galvanometer will be zero in this case will be apparent if the drop in potential along the two sides of the bridge is studied. Whenever arms *A* and *B* have the same resistance value, then the unknown resistance will be the same as that of the rheostat arm setting, when the bridge is balanced.

It should be appreciated that the galvanometer merely serves to indicate that the arms of the bridge are balanced, and the resistance of the circuit or apparatus under test must then be interpreted from the dial settings of the *A*, *B*, and *R* dials. In order to increase the range and accuracy of the Wheatstone bridge, the ratio arms, *A* and *B*, are arranged to be set at different resistance values. The reason that this is desirable and necessary will be clear if the following relation is considered.

The bridge will be balanced and no current will flow through the galvanometer when the resistance of arm *A* is to arm *B* as arm *X* is to arm *R*, that is $A:B::X:R$. For example, if the unknown resistance in arm *X* was 10 ohms, then with equal resistance in the *A* and *B* arms, the resistance in the rheostat arm would need to be 10 ohms to balance the bridge; and as previously stated with equal ratio arms the rheostat setting (when the bridge is balanced) gives the resistance of the unknown arm.

But if a resistance of 0.01 ohm was to be measured and was placed in the *X* arm, it would then be impossible to balance the bridge with equal ratio arms, inasmuch as the lowest step in the rheostat arm is one ohm. This is where the ratio arm of the bridge becomes useful. By setting arm *A* on one ohm and *B* on 1,000 ohms, a balance will be obtained when the rheostat arm is set on 10 ohms, with 0.01 ohm in the *X* or unknown arm. This is in accordance with the statement that the bridge would be balanced when the resistance of arm $A:B::X:R$, and in this case, $1:1{,}000::0.01:10$ and $X=0.01$ ohm.

If the unknown resistance to be measured was greater than that contained in the rheostat arm, say 50,000 ohms, then it is apparent that we can not measure this resistance with the same setting of arms *A* and *B*. In this case we set arms *A* and *B* on 100 and 10 ohms respectively; and with 50,000 ohms in the *X* arm, we would need to set the rheostat arm on 5,000 ohms. We would thus satisfy the fundamental equation; that is $100:10::50{,}000:5{,}000$, or $X=50{,}000$ ohms.

Thus by means of the ratio arms, *A* and *B*, we are able to measure resistances of values ranging from 0.001 to 10,110,000 ohms on a bridge having a rheostat arm of a maximum resistance of 10,110 ohms.

If the resistance to be measured is greater than the maximum resistance in the

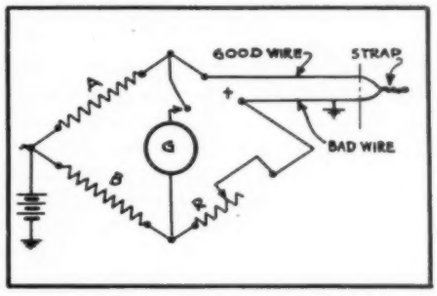


Fig. 6. Varley Loop Arrangement for Cable Fault Location.

rheostat arm, then ratio arm *A* must be be set at a greater value than arm *B*; and if the resistance is lower than the minimum resistance of the rheostat arm (1 ohm) then we must set arm *A* at a lower value than arm *B*.

The formula for computing the resistance in the *X* arm when the bridge is balance is: $X=AR/B$, where: $X=$ unknown resistance, $A=$ resistance in arm *A*, $B=$ resistance in arm *B*, and $R=$ resistance in arm *R*.

Wheatstone bridges usually indicate on an instruction card fastened in the lid of the bridge case, the proper setting of the two ratio arms *A* and *B* for various resistance ranges.

The foregoing discussion was intended to describe the general theory of the Wheatstone bridge. For general resistance measurements, such as obtaining the resistance of apparatus, circuits, etc., it is used as shown in Fig. 5. But for the location of faults in cable or open-wire telephone and telegraph plant, a somewhat modified circuit is used, although the fundamental principle of the Wheatstone bridge remains the same.

Two Methods of Bridge Fault Location.

There are two bridge arrangements that are in general use for the location of faults in telephone and telegraph circuits, either in cable or open wire. These two methods are known as the "Varley" and the "Murray" loop methods. They both give the same answer although obtaining it in different ways. Essentially they utilize the wire in trouble together with a good wire as part of the *X* and *R* arms of a Wheat-

stone bridge circuit, which is so arranged that the battery current feeds into the X and R arms via the fault.

Referring to Fig. 6 it will be noted that the bridge circuit of the Varley loop is balanced by setting the ratio arms, A and

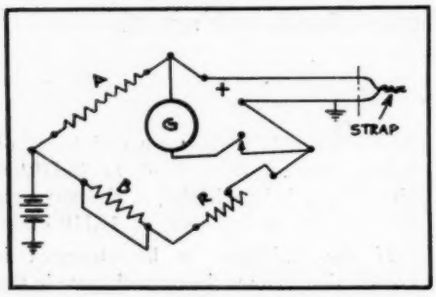


Fig. 7. Murray Loop Arrangement for Cable Fault Location.

B, for the proper range and then adjusting the rheostat, or R arm, to balance the bridge.

But in Fig. 7 it will be seen that while the fundamental bridge circuit still exists, the B arm of the bridge is replaced by the R or rheostat arm and that the X and R arms consist of the bad and good wire on which the test is made. The bridge is balanced by varying the ratio of the A and B arms by means of the rheostat. It is evident that the Wheatstone bridge equation, $A:B::X:R$, is satisfied by varying the ratio arms, A and B, with the X and R arms constant, the same as if the R arm was varied.

It is best to think of the B arm being replaced by one that is variable from 0 to 10,110 ohms rather than refer to it as being replaced by the R arm. In the Murray loop method we have the four fundamental bridge arms, A, B, X, and R, except that the B arm is the same as the R arm in the Varley loop, while the R arm is fixed.

These two methods of fault location are of great value for the location of cable trouble of a high resistance character. They have two chief advantages over straight resistance measurements which are:

1. The accuracy of the measurements is independent of the fault resistance.
2. The accuracy is higher than with the regular voltmeter measuring methods.

On the type of faults commonly encountered in telephone plant, the fault itself usually has some resistance. When the resistance is included in straight resistance measurements, the result indicates the trouble to be further away from the tester, than is actually the case.

In the Varley and Murray loops, the resistance of the fault does not affect the accuracy of the measurements, although it must be low enough to permit sufficient flow of current to give a readable deflection on the galvanometer. Practically any fault that would be of low enough resistance to cause trouble, will answer this last requirement.

As to which of the two methods is better, it is hard to say. Some advocate one and some the other. They are, in the writer's opinion, equally good and if a bridge is available having a cam key to enable easily changing from a Varley to a Murray set up, then a good plan is to measure the distance to the fault first with the Varley and then check this answer with the Murray loop.

The Varley Loop.

Fig. 6 illustrates the fundamental theory of the Varley loop. It will be noted that the chief difference between this arrangement and the regular bridge circuit is that part of the bad wire and all of the good wire are included in the X arm, while the R arm contains the portion of the bad wire from tester to fault. It will also be noted that the fault is utilized as the point at which battery feeds into the R and X arms.

To clarify the use of the Varley loop, let us assume that we have wet cable and desire to locate the exact point at which the fault occurs. The following steps will then indicate the procedure to be followed in locating the trouble.

Step 1. The first step is to run over the pairs of the cable in trouble and with either headset and battery or voltmeter and battery locate one good wire which has an insulation resistance to ground of at least 100,000 ohms. This wire is referred to in loop work as the "good wire."

Step 2. Select one of the wires in trouble, preferably one which has the heaviest leak to ground. This wire is referred to in loop work as the "bad wire."

Step 3. Strap the good and bad wires together at the first terminal past the section in which the fault is known to exist. Disconnect all subscribers' lines from the pairs used in the test. At the office end connect the good and bad wires to the proper bridge posts as shown in Fig. 6.

Step 4. Set the ratio arms, A and B, so that they are equal, i.e., $\frac{1}{1}, \frac{100}{100}, \frac{1{,}000}{1{,}000}$ and adjust the rheostat so that the bridge will balance. The *resistance from the strap to the fault* may then be found by applying the following formula to the rheostat reading:

$X = R/2$, where X is the resistance from strap to fault, and R is the rheostat reading.

Step 5. The actual *distance from strap to fault* is found by multiplying the value, X, by the cable conductor "feet per ohm" equivalents.

$D = XZ$, where D is the distance in feet from strap to fault, and Z, "feet per ohm" for the cable involved.

The distance may also be found by the following formulas:

$$D = R/L_r \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$D = X_a/R_b \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where L_r is loop resistance of good and bad wires per foot; D, total distance in feet from tester to strap; and R_b, resistance of bad wire from tester to strap.

The loop resistance L_r can be obtained by straight resistance measurements which must be divided by the total distance from tester to strap to give the loop resistance per foot.

The resistance of the bad wire in formula 2 can be obtained by using a third good wire, as shown in Fig. 8 and applying the following formula:

$$R_b = \frac{L_r - R}{2}$$

These computations assume that the good and bad wires are of the same gauge and resistance. Where no good wire is available in the same cable, it may be necessary to use a good wire of different character, which may be either a temporary pair of drop wire strung out along the cable route, or a cable pair in a cable on another route, temporarily tied to the cable in trouble. In this case a somewhat different method of computation and measurement must be used.

The following steps are necessary to locate faults when the good and bad wires are not of the same resistance:

Step 1.—Select a good and a bad wire and strap them at the distant end.

Step 2—Measure the loop resistance of the good and bad wire. Use formula $L_r = AR/B$. Use the regular Wheatstone bridge set up, Fig. 5.

Step 3—Connect the strap at the distant end to a third good wire as shown in Fig. 8 and obtain the resistance of the bad wire from the tester to the strap. Use formula $R_b = \frac{L_r - R}{2}$. Set ratio dials A and B on same value.

Step 4—Connect for regular Varley loop as shown in Fig. 6. Set ratio dials on same value. Apply the following formula to obtain the *resistance from tester to fault*: $Y = \frac{L_r - R}{2}$ where Y is the resistance from tester to fault.

The *distance from tester to fault* may

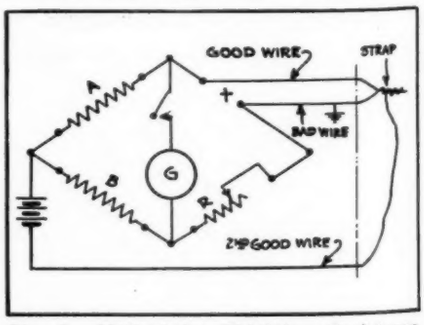


Fig. 8. Method for Obtaining Resistance of the Bad Wire by Means of Second Good Wire.

then be found with any of the formulas given previously.

An alternative method to the *above* two methods is as follows:

Step 1—Select a good and a bad wire and strap them at the distant end.

Step 2—Connect the strap to a second good wire as shown in Fig. 8 and balance

the bridge. Call this reading Y_1. Use unequal ratio arm values such as $\frac{100}{1000}$.

Step 3—Connect as shown in Fig. 6 and balance the bridge. Call this reading Y_2. Use same ratio dial settings as used in step No. 2.

Step 4—Apply the following formula to obtain the *resistance from strap to fault:*

$$X = \frac{A}{A+B}(Y_2 - Y_1).$$

This method has several advantages over the first three methods described. In the first place it permits the use of unequal ratio dial settings, which gives readings to a fraction of an ohm. It also gives the resistance from fault to strap rather than from fault to tester.

This is advantageous in that it usually gets away from the complexity of working with two different gauges of cable, and it also automatically subtracts the resistance of the testing leads to the point at which they connect to the cable pair. It is not necessary that both wires be of the same character or resistance in this method.

On long cables of uniform size, such as rural cables, it is generally desirable to place a single No. 12 iron wire on the same pole line with the cable. In the event of trouble in the cable the paralleling iron wire is always available for a good wire. In small cables when affected with moisture trouble, it is usually impossible to find a pair or conductor that is not below the limit specified for "good wires."

The actual distance from strap to fault may be found by any of the formulas given in preceding paragraphs.

The Murray Loop

As previously explained, the Murray loop differs from the Varley chiefly in the method of balancing the bridge. The Murray loop obtaining a balance by varying the bridge ratio arms rather than the rheostat arm. The following steps indicate the general procedure in locating cable faults by means of the Murray loop.

Step 1—Select good and bad wires and connect as shown in Fig. 7. Measure loop resistance. Use formula $L_r = AR/B$. Use regular Wheatstone bridge circuit, Fig. 5.

Step 2—Connect as shown in Fig. 7 and balance the bridge. The resistance from tester to fault may then be determined by applying the following formula $Y = \frac{A\,L_r}{A\,R}$.

The distance to the fault can be found by the formula $D = \frac{Y\,d}{R_b}$.

It is not necessary that the good and bad wires be of the same resistance with the foregoing Murray method. The Murray loop is very simple and gives results to a fraction of an ohm and is, therefore, satisfactory for measurements of short cables.

The location of cable faults is one of the most difficult tasks with which maintenance men have to contend. However, if the various methods used in the location of cable faults are thoroughly understood and if the proper apparatus is available, the task is relatively simple and easy.

There are few common battery plants of 500 stations and over which cannot "prove in" a moderate priced Wheatstone bridge. Bridges especially designed for telephone testing are available at prices ranging from $75 to $150. On moisture trouble, with dozens of subscribers out of service, it is a consoling thought to know that the trouble location can be quickly ascertained and service restored.

Proficiency with the "loop methods" can easily be attained by placing artificial faults at multiple terminals and attempting to locate these points by actual measurement. If care is taken in setting up the loops and making ground measurements, it is possible to locate trouble within a foot or so of its actual location. Locations within several feet or even spans in the case of moisture trouble are generally sufficient, as the sheath opening can then be easily found by inspection.

Where the cable between tester and fault or strap and fault is of several different gauges, then it will be necessary to convert all the cable to one gauge by the use of equivalents. If all of one gauge, the use of the formula $D = Y\,d/R_b$ gives the most accurate results, as any error due to temperature change is eliminated. If "ohm per foot" equivalents as taken from tables are used, then temperature corrections should be applied.

Tone induction sets in connection with a Wheatstone bridge set make an excellent testing combination. The approximate location can be made with the Wheatstone bridge, and then the exact location ascertained with the "tone set" and pick-up coil.

Knowing the approximate location of the trouble, the "tone set" will usually give sufficient indication to show the exact point at which the trouble occurs, for the listener is on the alert and expects the change, whereas in a long section with the approximate location unknown such is not the case, and the tendency is to pass by the point of change in tone without recognizing it.

The sense of security that comes with knowledge that cable failures can quickly be restored is well worth the effort required to obtain a thorough understanding of all the phases of "fault" location.

Northwestern Bell to Install New Type "Buried" Cable.

The Northwestern Bell Telephone Co. has announced plans for the laying of a 31-mile "buried" cable between Cedar Rapids and Iowa City, Iowa. The cable, which is expected to go into service some time during the summer of 1930, will cost approximately $500,000.

The cable between Cedar Rapids and Iowa City is the first installation of its type in Iowa between cities separated by any considerable distance, and is the first use of this type of cable in the Northwestern Bell company's territory. The type of cable to be used in this installation is a development of the last nine months, and is the first that gives the company the assurance it needed to proceed with long and expensive changes from aerial to underground cables.

The cable is of a type known as tape armored cable, securing its name from the fact that it has a covering of steel tape for protection, rendering it unnecessary to lay it in conduit. A trench three feet deep is dug and the cable laid in it and then covered.

To produce an armored cable, an ordinary lead cable is used. It is covered first with an asphalt compound, then a layer of paper saturated in asphalt, then two layers of jute, and on top of these two layers of steel tape 1/25 inch thick are wound around it spirally. The last covering consists of two layers of asphalt saturated jute wound in opposite directions. A coat of whitewash is applied to facilitate handling. The outside diameter of the cable is 3¼ inches, and it weighs 12 pounds to the foot. It is wound on steel reels seven feet in diameter holding 750 feet and weighing five tons.

The asphaltic compound used presents corrosion of the cable and rusting of the steel, while the steel offers protection of the lead sheath which encloses the wires.

In the cable will be 556 wires, the total length of which will be 17,200 miles. The wires in the cable will be used to provide long distance service between Iowa City and Cedar Rapids and to other cities and towns which are served over this route. Enough wires are being provided so that not only present needs but those of several years to come will be met.

Slices will be made every 750 feet along the route, and at every 6,000 feet splicing boxes will be located offering access to the cable. Short steel or concrete posts at intervals will mark the route of the cable which will be laid in a straight line. Much of the route is along private right-of-way, but farming of fields crossed by the cable will not be hampered.

To lay the cable, special equipment will be used. A trenching machine will dig the trench, a special trailer attached to a truck will lay the cable, the trench will be filled by back-filling machine, and a tamper will press down the loose dirt.

The Iowa City-Cedar Rapids cable will connect at Iowa City with a combined underground-aerial cable which ultimately will extend across the state from Davenport through Des Moines to Omaha. Additional branch cables extending out from this main cross-state cable will be provided in the future to meet the increasing use of long distance service.

Discussions From Iowa Traffic Meeting

Necessity of Element of Good Will Among Operators to Give Most Efficient Service—Progress of Women in Industry and Their Handicaps — Two Papers Presented at Traffic Conference of Iowa Association Annual Convention

Good Will Service.

By Miss Edith Drew,

Chief Operator, Iowa State Telephone Co., Newton, Iowa

Good-will is the life-blood of an organization. People employed by any organization must have the right feeling toward the people for whom they are working in order to have good public relationship. It seems to me that the proof of good will in an organization is realized when all employes feel that they are not working for a boss but rather with their organization.

Many years ago the thought was that a boss must get just as much work from his employes, and pay just as little as possible, and that the employes must do just as little as possible, and wring from the boss just as much pay as they could, but that is not true in organizations today. Both employer and employe are working side by side with the new spirit of a broader and deeper thought of the good of humanity. This demonstrates the truth that in no union is there such great strength as in the union of those who are working together creating wealth and happiness for themselves in their service for humanity.

Telephone offices today are real places of business; places where employes come together to promote greater progress in human affairs. Such things as operators visiting with subscribers, giving a too-personal service in allowing subscribers to call by name, and such like, are rapidly passing into the discard, and each operator conducts her work in a courteous, pleasant and helpful manner, along with a spirit of good will.

The average employe today is not satisfied in just giving service. He wants to be a credit to his ability if for no other reason. The service given years ago would not satisfy the public today. We cannot picture them accepting it, can we?

Good will and system are two factors through which good service is created. No business place, large or small, can succeed without system and good will in the organization. A story showing the lack of good will in a community is told: A traveler came to a town of 800 residents and nine churches. After walking about the town, he went back to the hotel and said to the proprietor: "Brother, these people surely must love the Lord."

"Well," replied the hotel man, "that may be true, but they sure hate one another."

In telephone work the operators *alone* cannot give the kind of service the public expects, unless the good will thought radiates from every member of the company. Each must do his or her part efficiently, effectively and contentedly. There must be evident the human elements of character, personality, and fair and courteous treatment to all in every telephone contact.

A chief operator *alone* cannot realize success. Her success comes through the constant working in harmony and good will with her operators, and they working in the same way with her. She succeeds as she helps others to succeed. The busiest most enthusiastic chief operator at the head of her office is the one who creates good will in all of her contacts; and through these, her operators create good will in all their contacts. The subscribers catch the spirit of good will, and on it goes. Perfect harmony in any office means success for the company, satisfied subscribers and happy employes.

A chief operator must carry with her an understanding spirit. Her work must cast favorable impressions upon the minds of her workers. She is their guide and helper. Would you expect an operator to show interest in her work if her chief operator did not do the same? Would you expect an operator to be 100 per cent efficient if her chief operator neglected her duties?

No; of course not. If a chief operator refrains from trying to help others, or if she resents correction, well, all there is to be said about it is—"Good will flies out the door and ill will stays," for who ever heard of "Good Will" and "Ill Will" teaming together for good service. When an executive in charge does not keep the service uniformally good, it is often because she is not interested; if she is not interested, it is because she has not taken her job as an executive seriously enough. The idle, disinterested chief operator creates ill will throughout her organization.

There is the old staying that "A good general creates a good army and leads it to victory, and a poor general demoralizes and leads to defeat the finest and bravest army." Does this not apply to us as chief operators?

A chief operator must be very particular in selecting the right sort of people to handle such particular work as operating. The public judges a company by the help it employs. This is especially true in small towns. If a girl is known to be sweet dispositioned by the people in her town, there is a pleasant reaction at the thought she is serving them as their Central. Too much attention cannot be given to the selection of an operator. Careful choosing and training result in good operators. Trained operators work to a better advantage for the company and create good will among the patrons.

It is true that every employe does a certain amount of physical work, but the true value of his service depends upon the amount of intelligence and good will that he puts into it. The employe, doing work for which he is not fitted, is sure to be unhappy and discontented. Such an employe is a detriment not only to his company but to himself and the public he serves.

Good will service is sure to be rendered efficiently, loyally, enthusiastically and cherrily, and, operators, we are not only serving the public from our switchboards but, here, there and everywhere, we are builders of Eternity.

Isn't it strange that princes and kings,
And clowns that caper in sawdust rings,
And common folks like you and me,
Are builders of Eternity?
Each is given a set of tools,
A block of clay and a book of rules,
And each must fashion, ere life is done,
A stumbling block or a stepping stone.

The Progress of Women in Industry and Their Handicaps.

By Mrs. Pauline Neufeld,

Superintendent of Women's Division, Des Moines Employment Bureau, Des Moines, Iowa

Of course we women in industry all realize, taking it all in all, that only the last 10 years have given women a real place in industry. That we have made progress is evident by the many prominent positions women now hold.

But there are a good many drawbacks for women in industry and perhaps the biggest one of them is that so many employers still consider us insincere and undetermined to make a real vocation of business. Employers still feel that if a good-looking man came around, we would soon forget our training and all our obligations and would grab the opportunity for a home, which is perhaps quite true to a certain extent.

Although she may be wanting the companionship and the home life, the woman in industry today does not marry for a meal ticket only. She marries with the same intention that a good man does—to contribute her share, to take part of the responsibility, and perhaps eventually to raise a family. After her work is done in the home, she may again wish to go

into the business world. This has been the case in a great many instances.

Women have done well for themselves and contributed much to society.

There is one particular thing I would like to speak of, a subject which is close to my heart. I am not sure just how you women might feel about this, but I have given it much thought and find that we have any number of societies and organizations which are constantly striving, by promoting different legislation and safeguards for women, to do something for women in industry. Little do they dream of the handicap they are putting on women who are really eager to progress and wish to put their best efforts into industry. I wonder how many of your women have looked into the eight-hour law proposition?

It doesn't mean eight hours of work; it means from 8 o'clock to 5 o'clock, it doesn't mean double time for over-time, as men have, but it means penalty in any clerical work and prohibiting any woman to work after 5 o'clock. With the exception of stores which start at 9 o'clock and are open until 6 o'clock, and some provisions for nurses and waitresses, all other work which would require over-time work for women, has been excluded.

Can you imagine any of us being bound by such rules and regulations of the law? That if we were doing a piece of work which required 10 or 15 minutes or a half an hour for completion, to absolutely drop everything and quit when the clock strikes 5 o'clock? Would not any employer, worthy of the name, much prefer to have a man in such a position, when he has the knowledge that under the law, a man could work over time and complete the job in question. Surely, if men are entitled to work over time, women should not be held by an iron-clad law requiring them to cease work at any given hour.

I could go on and for an indefinite length of time and tell you why the eight-hour law, and in some instances nine-hour laws, would mean a menace to women in industry, but I want to leave one other thought with you. It is that there is a broad field for real business women with many places at the top. Most women have not as yet learned to be fair to one another. You will find that we are still not as broad and liberal to one another as men are; we still possess that little catty enviousness that we will not permit the women under us to learn our work to give her an opportunity to do bigger things, because we constantly feel that she might surplant us in our jobs.

We are still not conscious of the fact that behind every big man there usually the brain of a good woman that is helping him to do the big things he is putting over. I don't mean to imply that men are not as intelligent as women, but they do not like the little detail things that are wholly so essential to accomplish the big things.

All in all I would like to leave with you the assurance that women in industry are here to stay.

I don't know of any industry that has a better opportunity for women than the industry here represented. I know the qualifications that are required to fill the positions the various individuals here hold. I realize the patience, the tactfulness, the health, the vitality it takes to hold the positions that you have achieved and succeeded in obtaining.

Let us hope that your telephone companies will realize the splendid people and personnel they have, and advance you eventually in your chosen vocation to the definite executive positions which you could well fill if given an opportunity.

With my best wishes for your welfare, I close with this quotation:

Cooperation.

Select a magnet of steel
Of any given length.
Then double it, and joy you'll feel
In quadrupling its strength.
Two times two—not four—but eight,
Whenever we cooperate.

Our mighty God can take just one
And make a thousand flee;
But give Him two and then He'll run
Ten thousand to the sea.
Things increase at a ten-fold rate
Whenever we cooperate.

Sure, I can take a hook and line
And catch a single fish.
But if you'll help me hold the seine
We'll take in all we wish;
A bigger catch and greater weight
Whenever we cooperate.

Since this great truth is written large,
In products of the mine;
Exhibited in battle charge;
Rewards the fisher's time;
'Tis true, indeed, without debate
God wants us to cooperate.

We'll do this in His glorious work
Through all the days to come.
And not a single member shirk
Until the task is done.
We'll win the world at rapid rate
Whenever we cooperate.

GOOD, FAIR, POOR, or NO GOOD—WHICH?

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

It is my belief that most chief operators desire to be well-posted in their work. Very likely the reason for this is that managers are making a more careful selection than formerly when placing young women in charge of the operating room.

Chief operators, according to my views, belong to one of four classes: Good, fair, poor, or no good. I am interested in the first three.

How did the good chief operator become "good"? Surely, it must have been a growing process.

These are a few observations I have made:

One reason why some chief operators make good is that they have initiative and originality, which stands them well, especially in those cases where they work under hard conditions, such as poor equipment and unpleasant housing quarters.

They are willing to assume full responsibility of their management duties; and they never expect their managers to handle the hard and unpleasant parts of their work.

They delegate responsibility and proper authority to assistants so that there will be no break in the good grade of service during any hour of the day.

I observe that "good" chief operators come from the ranks.

They keep up-to-date in their local and toll practices.

They are good teachers.

They know how to handle other employes and the public tactfully.

They do not work at random, but rather their ways and means of accomplishment are through certain definite rules, regulations, methods, and practices.

They record their accomplishments through peg counts, operator schedules, and other office routines.

Some of the office routines pertain to coin-box drills, switchboard designation checking, and night alarm tests.

"Good" chief operators have an objective toward which they are always working. It is this:

Aim for the best results attainable in the use of equipment; render the highest grade of service with as few errors as possible; make every toll and local call easily and satisfactorily earn a maximum revenue, with a minimum expense in operators' time.

Chief operators who keep such an objective in mind, and daily strive to attain it, have earned the right to be called *"Good" Chief Operators.*

Here and There in Telephone Work

Uniformed Messengers for Directory Delivery Make Hit.

The practice of using uniformed messengers in the delivery of telephone directories was inaugurated in the Pacific Northwest by the Pacific Telephone & Telegraph Co. with the distribution of the

Messenger Delivering New Directory in Tacoma, Wash., and Receiving Old One from Subscriber.

Portland and Tacoma August edition of the directories. The same plan was followed in distributing the Seattle September issue.

Eighty-five messengers and a fleet of 30 trucks, supplied by the City Messenger Service of Portland, but working under the direct supervision of R. B. Bacon, Oregon directory supervisor, and his staff, accomplished the delivery in a new record time for Portland.

The practice of using uniformed messengers to deliver the directories made a decided hit, according to an article in The Pacific Telephone Magazine. The uniform coats were made of an olive-gray material, bearing the Blue Bell emblem of the Pacific Telephone & Telegraph Co., and they are durable enough to last for several more seasons. Caps of the same material, with a bell emblem, also were worn.

In delivering the book, messengers were instructed to ring the doorbell and whenever possible to present it to the user personally, a card of notification of the delivery otherwise being left. Courtesy towards customers was emphasized in all cases.

Supply stations, established at each central office in the city—and supervised by a directory salesman—served as headquarters for the trucks, each truck representing a team and captained by its driver.

All trucks bore large posters to the effect that the August edition of the directory was in the process of distribution.

In both Portland and Tacoma the August directory deliveries were completed in four days as against eight and ten days respectively for previous directories.

The Magneto Telephone Exchange Repairman; Drop Wire.

By John A. Bracken.

The wire running from the line to the subscriber's premises is called the drop wire. It may consist of a pair of bare iron or bare copper wire, No. 14 twisted pair rubber-covered copper wire, No. 17 twisted pair rubber-covered Copperweld steel wire, or No. 17 parallel rubber-covered bronze wire.

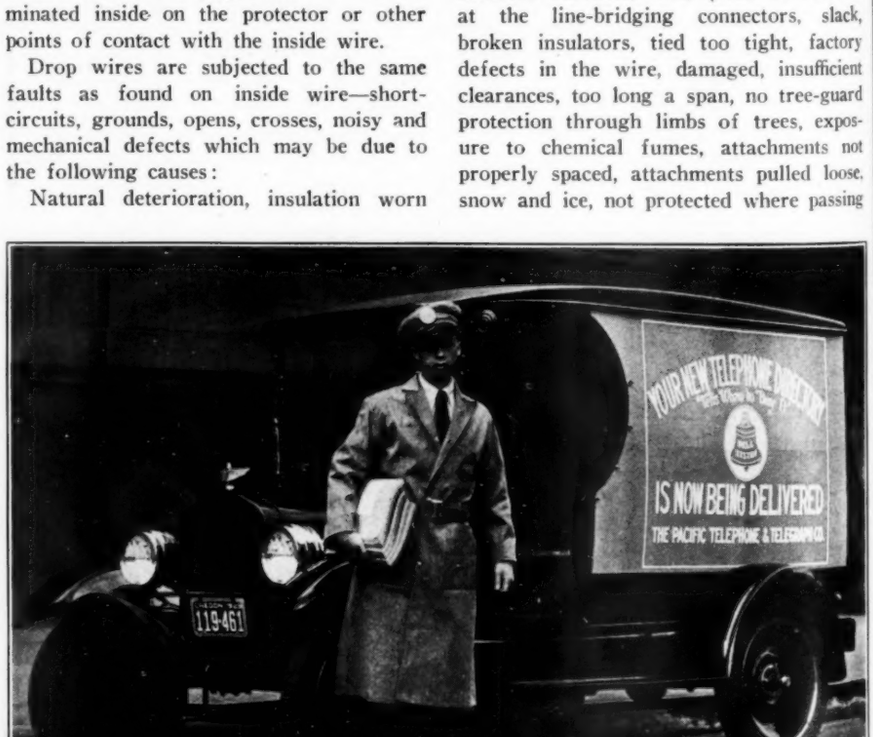
Drop wires are usually run from the cable terminals or from open-wire circuits through rings (if required) to porcelain knobs attached to iron brackets fastened to the poles or to crossarms, then aerially, with or without additional supports, to a knob which is attached to the subscriber's building. Other knobs and supports bring the drop wire to the porcelain tube entrance to the building where it is terminated inside on the protector or other points of contact with the inside wire.

Drop wires are subjected to the same faults as found on inside wire—short-circuits, grounds, opens, crosses, noisy and mechanical defects which may be due to the following causes:

Natural deterioration, insulation worn

Rear View of Uniform Worn by Messengers Delivering Directories in Portland, Ore.

in trees, kinks, improper splicing unprotected where in contact with or crossing abrasive surfaces, wet, loose connections at the line-bridging connectors, slack, broken insulators, tied too tight, factory defects in the wire, damaged, insufficient clearances, too long a span, no tree-guard protection through limbs of trees, exposure to chemical fumes, attachments not properly spaced, attachments pulled loose, snow and ice, not protected where passing



Directory Delivery Truck and Uniformed Messenger with Directories in Portland, Ore. Note Sign on Side of Truck Directing Attention to the Directory Delivering.

electric light and power circuits, foreign attachments to poles, poor workmanship, etc.

Tests for grounds, short-circuits and opens in drop wires can be made with the magneto test set the same as for inside wire given in a recent issue of TELEPHONY. It must be remembered, however, that on some lines the telephone set ringers are connected direct between one side of the line and ground; therefore it is best to disconnect the drop at the protector or other terminating point and the pole when making tests.

Owing to the usually very short run of drop wire, causes of faults can generally be readily discovered by inspection, and need not be tested for. A ground on bare drop wires can be caused by their coming in contact with grounded guy wires, wet crossarms and poles, in contact with metal work on buildings, or crossarms that are touching ground cable messengers.

Grounding of drop wires may be due to their being run through trees or in damp places on the subscriber's premises. Although insulated wire is used, it should not be taken for granted that the wire is proof against leakage, because if run through trees or placed in a position where the winds sway it against buildings, the insulation will soon wear through. Leakage with reference to a telephone line is an escape of the electric current to ground at some weak point along the circuit.

If the station is equipped with a protector, it will be advisable to examine the carbon blocks to see that they are free from grounds, for if the carbons are grounded on both sides of the circuit, the effect will be similar to a short-circuit.

When making tests for a grounded or a short-circuited drop, opening the wires where they enter the building will prevent a possible ground or short circuit on the station inside wire from being confused with a ground or short-circuit on the drop wires. It sometimes happens that the insulated twisted pair or insulated parallel drop wire is drawn too tight between supports, tied in too tight on insulators and in ring runs, pulled around corners without proper protection or added insulation. All of these tend to strain and break the insulation on the wire, and thereby cause a short-circuit.

Occasionally in testing, the insulation may have been removed and the tester failed to properly tape or reinsulate the wires, leaving an open spot that will cause a high resistance cross in damp weather. Such spots often corrode and finally cause an open circuit. It is because of this that the insulation should never be removed from insulated drop wire for the purpose of making a test. Instead, connection for testing should be made by means of a test clip having a sharp steel point capable of penetrating the drop wire insulation without damaging it and making contact with the wire.

To ascertain if the drop wire is open, connect the clips of the magneto test set across the drop wire where it enters the building and call the operator. If the operator does not answer, apply the same test to the line where the drop wire terminates on the pole. If the operator answers at this point, the drop wire is open.

In referring to noisy drop wires, it is to be understood as meaning that the circuit is in direct contact with foreign wires, metallic structures or supports connected to ground, or that there are loose connections in the drop.

In testing for noise, the first thing to do is to localize the fault; that is, determine two near points between which the trouble is to be found. This can be done by opening the drop wire where it leaves the line circuit and listening with the test set receiver, first toward the exchange and then towards the subscriber's station. In this way, if the trouble is in the drop when it is opened or disconnected, the rest of the line circuit will test quiet.

An inspection will determine if the drop wire is near electric light or power wires, crossed with other wires, or in contact with objects that would cause leakage to ground. An inspection of splices (if any) in the drop wire will determine if the noise is due to loose or improperly-made connections; that is, the wire showing evidence of not having been cleaned with emery paper or emery cloth, and that the sleeve did or did not contain the required number of turns or twists to insure a firm connection.

Open or bare drop wires swinging together or against metal supports in contact with the ground are sources of noise in drop circuits, also loose protector fuses, and grounded protector blocks.

In view of the fact that drop wire work necessitates the frequent use of ladders, a few rules relative to handling them are here given. Wherever practical, ladder shoes should be used to prevent the possibility of the ladder slipping. In using a ladder it is very dangerous to attempt to reach sideways so far as to throw one's weight off the ladder. It is not good practice to set up a ladder in a passageway or a roadway exposed to traffic, unless there is a means taken to guard it.

Ladders should not be placed on a building roof unless there is a piece of board placed under the ladder to protect the roof. Avoid placing ladders on slanting, oily, slippery, or icy footings, unless they are securely fastened and protected to prevent slipping or twisting. Ladders should always be placed securely in position before they are worked on. When it is necessary to shift the position of a ladder, the shifting should be done with the workman standing on the ground and not on the ladder.

There are two general methods of calculating the safe distance which the foot of the ladder should be placed from the wall of the building. The first one is to allow the foot of the ladder to stand one foot from the building for every eight feet in length of the ladder. Although this rule may apply to some ladders, using this to set the 24-foot extension ladder commonly used by telephone companies, the base would only be three feet from the wall, and it is doubtful if this distance is sufficient from the standpoint of safety.

The second rule, and the safest, is to divide the length of the ladder by four and add two. This is a good rule for most work involving the use of long ladders.

The repairman should, of course, use his judgment in so placing ladders that the distance from the point of support to the foot of the ladder will not be in too vertical a line, or that the ladder is not placed too far from the building, on account of the liability of its slipping.

Suggestion Service Gives Manager Ideas for News Stories.

C. W. Motter, head of the public relations department of the Lincoln Telephone & Telegraph Co., Lincoln, Neb., has long conducted a suggestion news service for the benefit of local managers, and reports that the amount of publicity that is thus secured through the local newspapers, of a character that is both helpful to the company and is real news, is growing monthly.

One of the most successful ideas in connection with this kind of a service is the sending out of pink notice sheets to managers telling of repairs made or to be made at the exchange. The headquarter's office makes up the budget and develops the improvements, extensions, additions and betterments for the local exchanges, and thus has first-hand information of what is going to be done at each local exchange. Because the local manager is rarely possessed of a "nose for news" and is too busy with his own many and confusing problems, it has always been difficult to make him a source of news even for the monthly company magazine, and Mr. Motter finds this a never-ending task.

Southern Indiana T. & T. Co. Issues Descriptive Booklet.

The Southern Indiana Telephone & Telegraph Co. has just issued an interesting booklet which gives a history of the system and its program of improvement, financial statements of the company, pictures of its properties and employes throughout the southern district of Indiana.

The company will not be ten years old until December 30, yet it has assets of nearly $3,000,000 and exchanges in 38 towns and cities and serves 160,000 persons. The home office of the company is at Seymour, Ind., where a new headquarters building has just been erected.

By-Products of Telephone Companies

The Educational Training and Development of the Employes in Sales Activities Has Resulted in Increased Revenue to Telephone Companies—Process of Educating Employes—Address Given at Wisconsin Association Convention

By F. V. Newman,

General Commercial Superintendent, Commonwealth Telephone Co., Madison, Wis.

The sales activity of telephone companies has been greatly augmented by the training and development of the individual employe, which has resulted in a substantial increase of revenue to the companies.

The step-by-step process of education began with the inauguration of welfare work, which convinced the employe that the company's interest was not a selfish one, merely to obtain the required amount of labor for the salary paid, but one which would result in mutual benefit, the principal object being to develop the initiative of the employe in order to become more interested in the company's dealings with its patrons.

Then followed the policy of better public relations, affording a better and closer contact of employes with customers. The privilege of attending group conferences, state and district conventions, reading of TELEPHONY, house organs, monthly publications of telephone companies and participating in discussions of sales methods have awakened the employe's sales initiative.

The next step to sales activities was developed by the use of competitive campaigns for the sale of additional service, including extension telephone sets and by-products.

Interesting employes in the purchase of the company's securities and later in the sales of securities marked another step of progress in sales activity by employes. Often the unexpected employe won the prize for the largest amount of stock sold, while others were rewarded for the greatest number of shares sold to individuals, thereby creating a greater interest in customer ownership.

With constant increase in operating maintenance, material and labor costs, the necessity for increased revenues has forced the development and sales of by-products in addition to the original form of revenue —that of subscribers' rental revenues.

One opportunity of increasing subscribers' revenue by selling more service, is by calling the subscriber's attention to the number of busy reports for his telephone. This is a practical sales talk which is convincing for additional service facilities.

Recording names of individuals or firms who are not listed at "Information" gives the salesman another good prospect to work on.

Regarding the class of service from a four to a two-party line and from two-party to individual line service is a suggestion for earning more revenue.

Studies of plant department records often indicate that party lines do not have the required number of subscribers' telephones connected thereon and the subscriber is enjoying the use of an individual line at a four-party rate. Regrouping of

"Revenues from By-Products Have Assisted Materially," Says Mr. Newman, "In Maintaining a Lower Rate Level to the Advantage of Patrons and the Approval of Regulatory Bodies."

subscribers affords economy in the use of cable conductors and may establish the subscriber's desire for a different class of service to meet his requirements.

Reading newspapers and obtaining a list of new concerns to the city and a letter of welcome to them plants the seed to subscribe for the indispensable and cheapest means of communication.

The convenience of an extension telephone which affords the subscriber a saving of steps and time should be emphasized by newspaper advertising; folders and "bill stuffers" mailed with subscribers' statements; suggestions printed on envelopes, etc. Selling extensions by use of the telephone has been productive and the temporary suspension of the installation charge has increased the volume of sales.

Selling campaigns by employes for additional revenues have caused the employes to take advantage of every sales point manifested in the daily routine of their respective duties and the keen rivalry for sales honors among employes has stimulated sales activity.

The hand-set or cradle type has appealed to many as something different from the long-used type of desk set. The additional revenue for this style, while not large, is well worth the sales effort.

Installations of private branch exchanges usually affords an excellent opportunity for an increase of revenue in the original installation and offers a medium for further increase due to the patron's future service requirements.

Wiring plans combining main lines, extension sets, keys and use of push buttons and buzzers, especially in the medium-sized retail business office, affords a practical class of service that earns more revenue.

Two-number, A. B. toll, C. L. R. methods and speeding up of long distance service, improved transmission, station-to-station, evening and night rates, reduced long-haul rates, key town sales plan, and sequence call list, have all popularized our long distance service.

Encouragement to increase the percentage of completed calls, studies of cancelled and uncompleted long distance calls and other methods used in the traffic department all work towards the increase of toll revenue.

The promiscuous use of the telephone by the transient and non-subscriber in whom the subscriber has no direct interest has opened an avenue of increased revenue by the installation of a pay station and placing the subscriber's telephone in a more concealed location. The sharing with the subscriber a portion of the local receipts as his commission is often an inducement to securing his consent.

Directory costs should be turned into the revenue column by the sale of extra listings and advertising in the alphabetical and classified section of the directory. Grouping of nearby exchanges, listing subscribers' names in double columns and the use of smaller type reduce directory costs. Many companies have used the directory as a by-product for a revenue producer, but some have in vogue low-price schedules which need an upward revision.

Rental of underground ducts, cable pairs, pole contacts by municipalities for fire and police signal alarms are by-products from the revenue standpoint.

Radio broadcasting service has been introduced by telephone companies to make

further use of facilities to increased revenue.

Growth in suburban development has necessitated establishing local base rate areas with extra mileage charges for service rendered outside of the base rate area, which is usually the corporate limits. The practice of serving rural subscribers at multi-party line rates, regardless of the length of the line, should be restricted, and rural base rate area of six miles with an excess mileage charge beyond base rate used.

A study based on operating costs has demonstrated that service or switching rates for subscribers' owned lines cannot be furnished profitably for less than a rental of 75 cents per month per subscriber with a minimum number of five subscribers to the line; where a lesser number is switched the minimum charge is collected. The burden of free service to nearby exchanges is slowly being eliminated. However, marked progress in this endeavor has been made in the past, but there is plenty to do in the future.

Originating commissions paid by telegraph companies where there is no telegraph office in the village plus the schedule toll rate for telephoning the telegram to the distant city where telegraph office is located, is another by-product from the revenue-earning standpoint.

Revenues from by-products have assisted materially in maintaining a lower rate level to the advantage of patrons and the approval of regulatory bodies.

Plans of Iowa Association for Fall District Meetings.

The Iowa Independent Telephone Association has scheduled and held 15 district meetings this fall. An operators' conference was held at each, with Miss Anne Barnes, traveling chief operator, Iowa Independent Telephone Association, conducting. Miss Barnes worked under the auspices of the engineering extension department of the Iowa State College, Ames.

A separate session for the men was held at each and a joint session of the men and women listened to a talk and saw a demonstration on transmission and common causes of transmission troubles, presented by the Northwestern Bell Telephone Co. The meetings held so far have been unusually well attended.

Secretary Chas. C. Deering states that the association will be glad to hold a few more of these meetings later in the fall and if any member company would like to have one held in its town to write the association. Such a meeting would entail little or no expense on the part of the company. The association will also schedule a number of operators' schools or conferences, without expense to the company.

Any information desired will be promptly forwarded, Secretary Deering states, and the companies writing about the meetings should advise the association if there are any dates to avoid in making up the schedule and also if the company is interested in either a district meeting or a separate operators' school.

A Large Attendance Featured the District Meeting and Traffic Conference of the Iowa Independent Telephone Association at Creston. It Proved a Popular and Educational Meeting.

On September 17 one of the conferences was held at Creston, Iowa, with the Creston Mutual Telephone Co. as host, and was attended by 95 men and women.

The meeting was in the form of a "telephone school," and a feature in the afternoon was a maintenance and transmission demonstration by Clyde Engstrand and F. H. Foster of the Northwestern Bell Telephone Co.

At noon all those attending the conference were luncheon guests of the Creston company at Iowana hotel, during which a comedy skit was presented to show the high type of girls required for operators.

Those who took part were Miss Bessie Culver, evening supervisor of the Creston exchange, Mrs. Louetta Stoneburner, chief operator of the Creston exchange, and Miss Anne Barnes.

The conference was in charge of Secretary Deering and George E. Atkinson, manager of the Creston company.

Ohio Bell Company Putting in Underground Cable System.

The telephone system of Ohio will benefit through a long distance cable system in fiber conduit being placed between Columbus and Circleville by the Ohio Bell Telephone Co. This is the company's first fiber conduit installation and will be one of the largest single underground projects in the country. It is in line with the company's aim to improve toll line plant in every possible instance.

The new underground cable will take care of existing requirements between Columbus and communities in the south and southeast portions of the state and also insure adequate facilities in the area for 15 or more years in the future. The cost of the project will approximate $600,000.

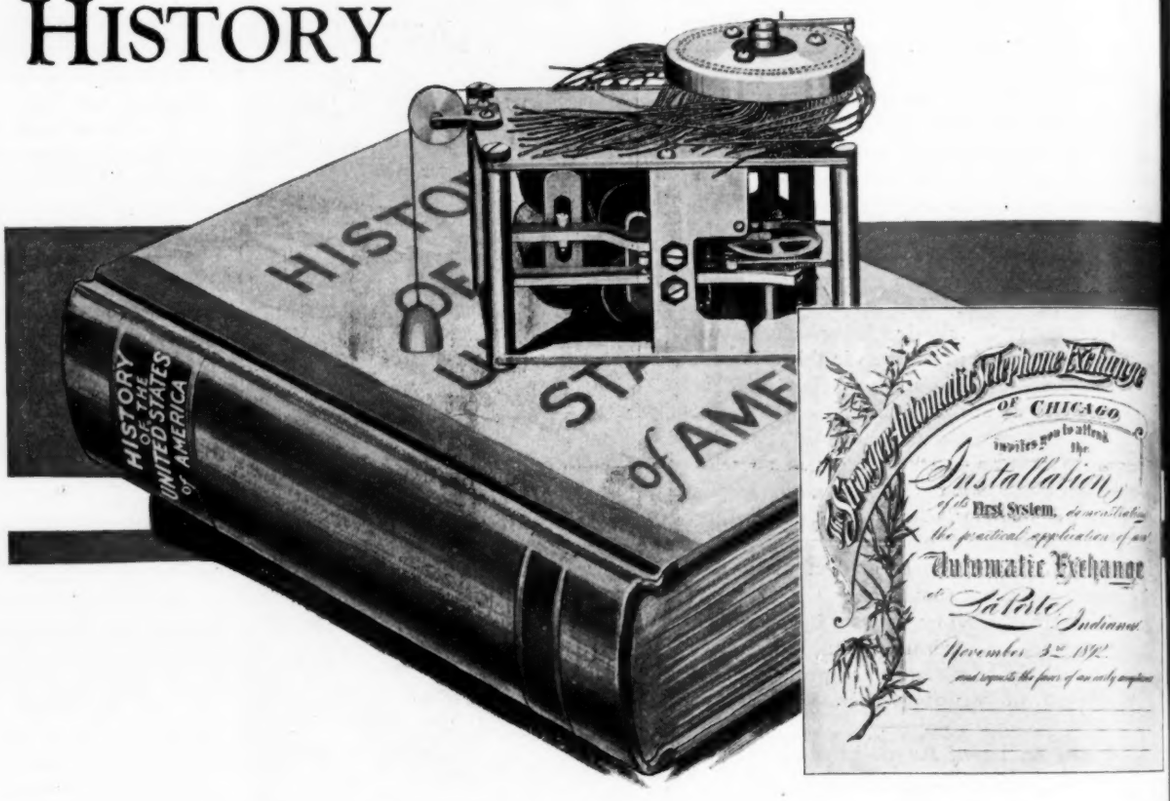
There will be 42 miles of cable in the underground system. The system will consist of an underground cable route directly from Columbus to Circleville, with a branch leading eastward from that to Canal Winchester and another branch leading from the Canal Winchester cable to Groveport.

The cable will begin to function next summer. Construction of the Columbus end of the system has just been started.

The project has been made necessary by the steady increase in the use of long distance telephone facilities by the public. Telephone engineers say that at the present rate of increase, 1929 will show at least 20 per cent more long distance traffic than there was last year in Ohio, with a possibility that the increase will be even greater. Telephone officials say that this has been due to the faster service which was inaugurated about a year ago, reductions in long distance rates, and the fact that general business conditions are good.

The First Automatic Telephone Exchange Placed in Everyday Service in the World was the Strowger Automatic Exchange Installed in La Porte, Indiana, in 1892. This is:—

HISTORY


HISTORY OF THE UNITED STATES of AMERICA
The Strowger Automatic Telephone Exchange Co.
of CHICAGO
invites you to attend the
Installation
of its First System, demonstrating
the practical application of the
Automatic Exchange
at La Porte, Indiana
November 3rd 1892

From A Few Lines In La Po
To Millions of Strowger A

THE switch shown above is one of the first Strowger Automatic switches, the original principles of which are still incorporated in the present day Strowger switches. It formed part of the first automatic telephone exchange in the world to be put in successful everyday operation at La Porte, Indiana, in 1892.

This first installation is now a part of telephone history—an important part to be sure, because from it as a beginning has largely sprung the present far-reaching automatic development in telephone operation. Upon the principles there proven sound, has been built the present universal acceptance of dial operation as being highly practicable, efficient and representative of the best ideals of service to the telephone using public.

The *Latest News of All* i... will be Shown at the ... States Independent Tele... 22, 23, 24 and 25 at t...

Autom... Inc.

STROWGER AUTOMATIC ...
Factory and General Offices ...
Sales and ...

GENERAL EXPORT DISTRIBUTORS ...
The Automatic Electric Company, Ltd., Ch...

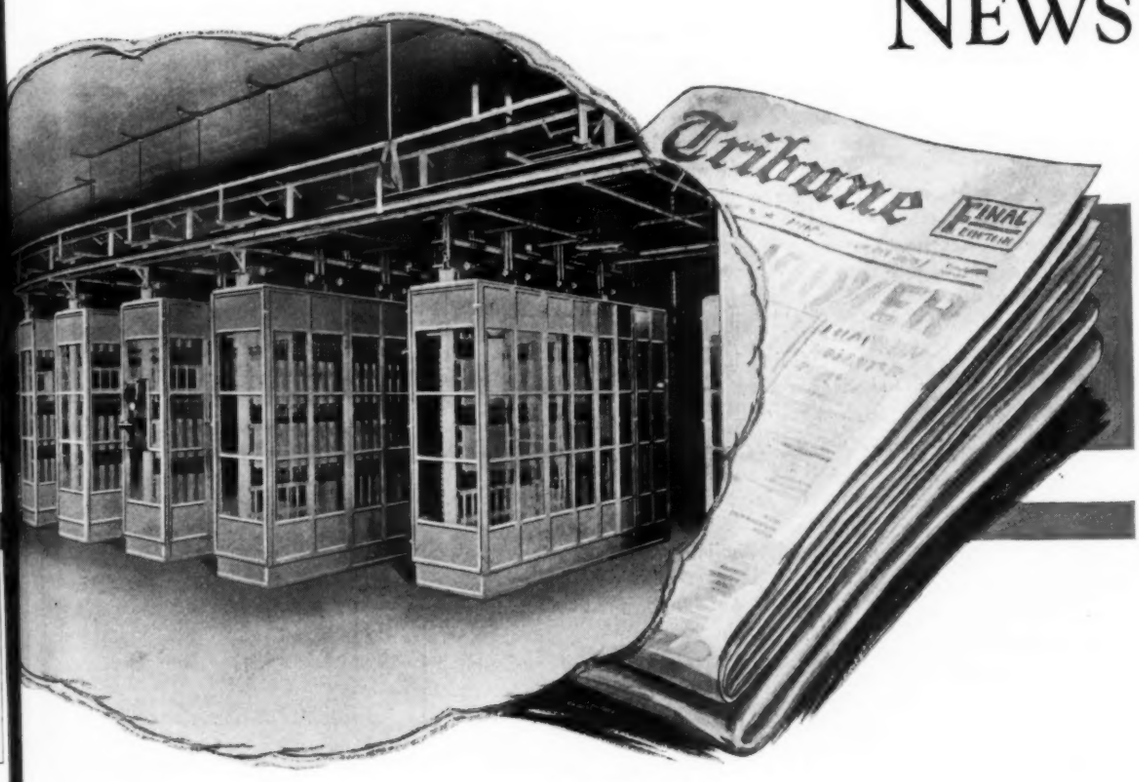
In Canada . . . Independent Sales and Engineering ... Vancouver
In Australasia . . . Automatic Telephones, ...
In Japan . . . Automatic Telephones Ltd. of ...

STROWGE...
DIAL S...

When writing to Automatic Electric Inc., please mention TELEPHONY

Progressive Cities Everywhere, Not Only in the United States But in Foreign Countries As Well, Are Daily Cutting Over to Strowger Automatic Dial Operation. This is:—

NEWS



...ndiana, In 1892 — ...atic Dial Telephones In 1929

...atic Developments ... the ...on of the United ...t Tele... to be held October ...5 at t... Chicago, Illinois.

THE above illustration is a view of Strowger Automatic Dial equipment in one of the latest exchanges to "go automatic." It is news—and is but one of many similar new dial exchanges that are constantly attracting the attention of telephone executives interested in keeping abreast of today's developments in telephone practice.

Today's news is an outgrowth of yesterday's history. The many new Strowger Automatic Dial exchanges being installed in every part of the world have been made possible by the history of yesterday's successful installations of this equipment. There is no substitute for experience—and it is this, combined with the accomplishments of the Strowger development staff in adapting and perfecting the original Strowger idea in accordance with modern needs, that has placed this system in the position of supremacy in the telephone field which it now occupies.

...utom...nc.

...OMATIC ...IGNALING SYSTEMS
...eral Offices ..., Chicago, U. S. A.
Sales and Se...

...RIBUTORS ...OCIATED COMPANIES
..., Ltd., Ch... ...Company, Inc. . . . . Chicago
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...Telephones, ...ne Manufacturing Co., Ltd., Liverpool
...nes Ltd. of Ja... ...Telephone and Electrical . . . . . Antwerp

...GE...TOMATIC ...STEMS

When writing to Automatic Electric Inc., please mention TELEPHONY

Adopts Stromberg-Carlson Equipment

Capital City Telephone Co., Jefferson City, Mo., Through Houck and Foster McHenry, Contracts for Latest Type of Super-Service Equipment—New Building and Improvements to Outside Plant Part of Quarter-Million Dollar Program

By E. R. Stonaker,
Consulting Traffic Engineer, Stromberg-Carlson Telephone Mfg. Co.

Jefferson City, capital of the state of Missouri, is situated on the Missouri river, in the central part of the state. It is a thriving and progressive community of about 20,000 population, being Missouri's eighth largest city.

The telephone-using public of Jefferson City are to be felicitated upon having engaged in the active management of the company which furnishes their telephone service, men of such business integrity and sound judgment as the Houck and Foster McHenry.

Realizing the need for new telephone equipment, these men desired to install a complete new system. However, before coming to any decision, they made a complete study of every type of switching equipment, the result of which was their decision in favor of modern manual. The equipment which has been contracted for is the newest type of Stromberg-Carlson super-service switchboard, which contains every feature for fast and accurate service.

Houck McHenry, President and Manager of Capital City Telephone Co., Jefferson City, Mo., Is Especially Well Known in the Independent Telephone Field.

The cost of the switchboard alone is in the neighborhood of $60,000.

In addition to the new central office equipment, underground cables will be installed throughout the business district of the city. The new building, which is now under construction, will have ample accommodations for the present and future needs of both the mechanical equipment and business offices of the company.

The total cost of the improvements will be about one-quarter of a million dollars, and when completed will give Jefferson City a telephone system on a par with that of any large city in the country.

The new equipment is to be housed in a fine new office and exchange building, to be erected on Madison street adjoining the location of the present building. The old structures which were on the site of the new building have already been razed and it is expected that the new switchboard equipment will be placed in service by the spring of 1930.

As the seat of the Missouri state government, Jefferson City already boasts many fine buildings notable among which is the capitol building itself, generally considered as rating, from an architectural standpoint, close to the top among buildings of its type in the country.

Into this setting the new telephone building will fit admirably, a credit in every respect to the city it will serve. Of reinforced concrete construction, faced with ornamental brick of special manufacture and matched coloring and with terra cotta trim, it will be a two-story and basement structure. The ultilitarian will blend with the artistic in as fine a telephone building as exists in any single-office city.

The building will have a 55-foot frontage on the southeast side of Madison street. Set back from the sidewalk a distance of six feet, the building will have a further depth of 87 feet. Plenty of room for growth will be allowed in its rear. There will be a small grass plot in the six-foot space between the sidewalk and the front wall of the building.

Two wide stone steps will lead to the front entrance stone landing, the whole to have an ornamental metal railing. Entrance will be into the vestibule and thence into a spacious lobby with domed ceiling. To the left of this lobby, a double door will lead into the commercial office public space where business with the public will be transacted over a counter by the local commercial force.

The lobby will have a terrazzo floor and a base and wainscot of marble. The public space will have a cement floor, to be covered with battleship linoleum, and it also will have a marble base. A door will lead from the public commercial office to the commercial work office, just to the rear, where the auditing, accounting, and commercial detail work will be handled.

To the right of the lobby, entrance will be had to two spacious private executive offices. A door between these offices and a door from the rear one will give access

Foster B. McHenry Aids His Father in Management of the Capital City Company and Also Serves as Secretary.

to the commercial work office, for purposes of supervision.

The terminal room will be to the rear of this group of offices, occupying the full width of the building and extending to the rear wall. Entrance will be had to the terminal room from the front lobby, through the commercial work office. There will also be an entrance direct into the terminal room from the rear of the building.

This room will house all the terminal and power equipment for both the local and toll switchboards. It will also house considerable repeater and toll-line apparatus, for Jefferson City is about the middle of the large toll-line cable being built across the state of Missouri, between St. Louis and Kansas City, by the Southwestern Bell Telephone Co.

Necessary toilet and cloak-room facilities and a vault will also be located on this first floor.

Stairs will lead from the lobby into the basement, the entrance being through a door located beneath the stairs leading to the second floor. The basement will house

the battery room, cable vault, heating plant, and storage space. An open staircase will lead directly from the lobby to the second floor, the steps being of terrazzo and the handrail of oak. Entrance will be had direct to a stair hall on the second floor. To the left of the stair hall will be a spacious directors' room. To the right will be the operators' restroom, locker room, and toilet room.

The operating room will have entrances both from the locker room and direct from the lobby.

The dimensions of the operating room will be 62 ft. by 32 ft. In it both the local and toll switchboards will be installed. The 12-position local board will be a Stromberg-Carlson super-service switchboard equipped with all of the latest features—many of them new to local manual practice—designed to aid the operator in rendering the highest grade of service known to the art.

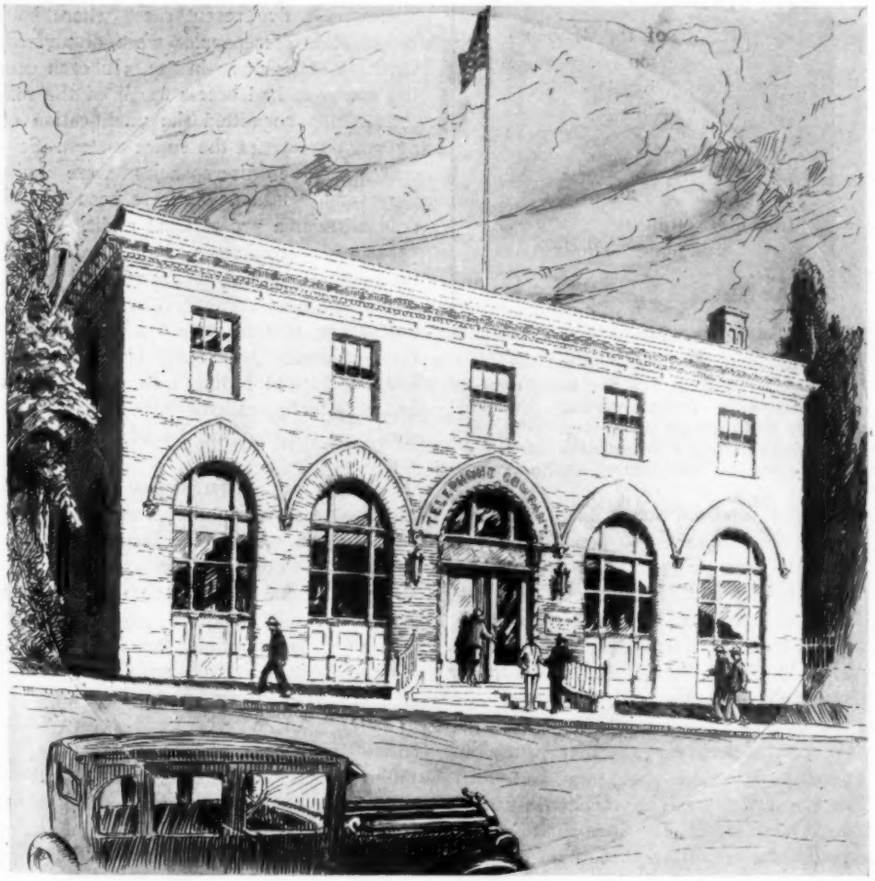
This board will be installed to grow from left to right along the northeastern wall of the room. The 12-position toll board will be installed on the opposite side of the room to grow from right to left along the southwestern wall. There will be room in the operating room for the local board to double in size and for the toll board to increase 75 per cent. That should take care of many years' growth.

The Capital City Telephone Co. operates in Jefferson City and suburban territory, all subscribers being served from a single, main central office.

Houck McHenry, its president and manager, has for years been an outstanding figure in the Independent telephone operating field, not only in his home state, of whose association he has been president for some time, but also in the national association, of which he is a director. A man of staunch integrity and high ideals, he has always been recognized as typifying the finest principles of the Independent industry. His decision in the present case is typical of the man.

It was based on the idea that, as he expressed it, "That service is best which serves most," and his desire to render that kind of service to his subscribers—a real service at a reasonable rate. His many friends and well-wishers in the telephone industry are congratulating him on this move which he is making to modernize and improve the telephone service and equipment at Jefferson City.

Foster B. McHenry, secretary and assistant manager, is carrying forward the same policies and high principles in association with his father in the active management of the company's affairs. Mrs. Z. G. Parker is vice-president of the company. These three, with Mrs. Houck McHenry, comprise the board of directors of the company serving Jefferson City.



Architect's Drawing of the New Building of the Capital City Telephone Co., Which Will Serve Jefferson City, Mo.

Change from Daylight Saving Increased "Correct Time" Calls.

Approximately 68,000 New Yorkers, who awakened on the last Sunday morning in September to find their own and others' clocks at variance after daylight saving time had officially been placed in the discard for the winter, made use of the New York Telephone Co.'s time service and called Meridian 1212 to get the correct time. This was an increase of approximately 100 per cent in the volume of calls ordinarily handled by Meridian 1212 on Sundays.

Figures compiled by the company show that on this particular Sunday morning 67,864 persons called to ascertain the correct time as compared with the usual 33,700 Sunday callers. Brooklyn led the boroughs in calls placed with 22,271; Manhattan was second with 19,025; the Bronx, third, with 14,354; Queens, 11,712, and Staten Island, 502.

During the busy hour at Meridian 1212, 7,610 calls for the correct time were handled, as compared with the usual Sunday morning busy-hour traffic of 3,100 for this type of call. This busy hour in Manhattan, the Bronx, and Brooklyn was from 9 to 10 a. m., while in Queens and Staten Island, where the number of Sunday early risers evidently is comparatively large, it was from 8 to 9 a. m.

The increase in the desire to be sure about the correct time was not completely absorbed on Sunday morning, as on Monday the calls for Meridian 1212 were still above the normal Monday traffic with 62,700 compared with the usual 55,200. Commuters in Brooklyn, Queens, the Bronx, and Staten Island arose early to ask about the time between the hours of 7 and 8 a. m., the "busy hour" for the time service in these boroughs, while Manhattanites lay abed a little longer to make their inquiries about the correct time of day, between 8 and 9 a. m.

South Dakota Association Announces Convention Dates.

The South Dakota Telephone Association will hold its 1930 convention at Watertown on January 14, 15 and 16, Secretary-Treasurer Thos. Phalen, Aberdeen, has announced. The convention headquarters will be at the Hotel Lincoln.

Overseas Telephone Extended to All of Czecho-Slovakia.

On October 1 the scope of transatlantic telephone service was again enlarged to include all points in Czecho-Slovakia.

Heretofore Prague, the capital, was the only city which could be connected by telephone with the New World. Now all telephones in the post-war republic—about 150,000—can have direct connection with all points in the United States and Cuba, and the majority of telephones in Canada and Mexico.

Systematic Accounting and Its Place

Discussion of Needs of Modern Accounting to Conform With the Rapid Growth of the Telephone Industry—Modern Methods and Machines Part of Efficiency Program of Companies—Some Common Errors Made in Plant Accounting

By A. D. Shamberg,

Managing Director, Coffey System & Audit Co., Certified Accountants, Indianapolis, Ind.

Every business is composed of several functions, these being of major and minor proportions. The operation of a successful and well-integrated business demands the complete coordination between the major and minor functions as to simplicity, thoroughness and efficiency. In analyzing the telephone industry, it is found that the major function is the transmission of messages since it is the basic source of revenue.

During the past 54 years, or since the invention of the telephone, the method of handling the transmission of telephonic messages and the facilities used in this operation have been completely revolutionized. Those interested in the promotion of the telephone were so keenly devoted to modernizing and systematizing the physical features of the industry, that little or nothing was done to improve the minor functions of the industry, one of which is the systematic accounting for the company's operations.

After examining the accounting system of hundreds of telephone companies located in towns and cities of every description throughout the United States, the personal opinion is formed that there are still too many telephone executives who do not place intrinsic value on modernized accounting methods and the advantages to be derived from professional audits.

Companies have been found which are continually expending large sums of money to install the most modern innovations in switchboards and other exchange equipment, replacing their magneto telephones with the latest type of dial telephones, supplanting their aerial lines with underground cable, and similar improvements. Yet it is not uncommon to find these companies using the same accounting records, and following the same accounting routine they did 25 years ago.

There is a reason which may be advanced for the apathetic attitude assumed by these executives towards revising their accounting methods. The telephone industry is comparatively young. There are many active executives in the telephone industry today who still remember the first telephone conversation between Alexander Graham Bell and his associate, Thomas A. Watson, on March 10, 1876.

The introduction of the telephone to the world, a phenomenal invention, created many thousands of telephone enthusiasts, especially among those who had a conception of the science of electricity. Many of these enthusiasts, through the love of experimentation and also a realization of the conveniences of the telephone and its vast potentialities, commenced organizing telephone companies. In most cases these organizers assumed the managerial position of the company.

"The Financial Statement of a Company," Says Mr. Shamberg, "Is the Barometer of Its Progress or Retrogression. The Accounting Records of an Organization Are Too Valuable to Be Maintained in a Perfunctory or Speculative Manner."

In 1928 there were more than 8,500 Independent telephone companies in the United States. Statistics show that of this number more than 1,500 are still actively managed by the founder of the company. These men have been so thoroughly devoted to their technical duties and to the promotion of their services that, in my observation, I found that they had little time to grasp the full appreciation of modernized accounting, the important part it plays in the organization, and its ultimate economy and reflection on the company's earnings.

Telephone accounting may be divided into three major departments:

1. Subscribers' accounts.
2. General books.
3. Plant records.

Although there are companies that are still using double entry ledgers for recording the accounts of subscribers, in general most companies have adopted some sort of prescribed columnar ledger for this purpose. Many companies are also using a card system or stub billing system for subscribers' accounts. For facilitating an audit, and for general efficiency, we have found the columnar ledger quite superior to the card or stub systems for the smaller telephone companies.

To properly maintain a card system or a stub billing system in handling the accounts of subscribers, certain subsidiary records are essential. Where the company is sufficiently large to departmentize the system so as to divert any one employe from access to more than one record, few opportunities exist for errors or discrepancies. Of five recent cases where both errors and discrepancies were discovered, the card system was in use. In each case the employes had access to all of the records which permitted the modification of figures throughout the entire system. Several of these discrepancies were quite large and would never have been discovered without a professional audit.

Modern bookkeeping and calculating machines are rapidly being adopted by the larger telephone companies as part of their accounting equipment and consistent with their efficiency program. The sorting of toll tickets and billing tolls, both tedious and lengthy operations, have been greatly simplified through the use of certain modern machines.

Recently our organization was called upon to re-systematize the accounting department of one of the larger telephone companies. Through the expenditure of less than $2,500 for modern machines and equipment, this company was enabled to operate its accounting department with two less employes and with greater efficiency. The saving in salaries alone is $1,800 a year, a very good return on a $2,500 investment.

The action of the Interstate Commerce Commission and the various state public service commissions in devising uniform accounts for telephone companies has greatly simplified the keeping of the general books and accounting records. Although these commissions require the accounts to be kept in a precise manner, deviations and variations have been found in the manner that the plant and depreciation accounts are being kept by most companies.

Plant accounting may be so simplified as to make it possible for even the smallest telephone company to maintain a thorough

P·R·O·G·R·A·M

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION, THIRTY-THIRD ANNUAL CONVENTION, OCTOBER 22-25

HOTEL STEVENS, CHICAGO

TUESDAY, OCTOBER 22, 9:30 A. M.

Annual Meeting of Board of Directors.
Opening of Exhibits. Registration of Members and Visitors.

GENERAL OPENING SESSION, TUESDAY, 2:00 P. M.

Reports of Officers and Chairmen of Divisions.
Appointment of Committees. Miscellaneous Business.

ANNUAL DINNER AND CONFERENCE OF STATE ASSOCIATION EXECUTIVES, 6:00 P. M.

"The State Convention," by Frank L. McKinney, Secretary of Ohio Independent Telephone Association, Columbus, Ohio.
"District Meetings," by J. C. Crowley, Jr., Secretary-Treasurer of Minnesota Telephone Association, St. Paul, Minnesota.

GENERAL SESSION, WEDNESDAY, OCTOBER 23, 9:30 A. M.

President's Annual Statement, by F. B. MacKinnon, Chicago, Illinois.
Address: "Increasing the Net Profits," by John H. Agee, Vice President and General Manager of Lincoln Telephone & Telegraph Company, Lincoln, Neb.
Address: "The Rochester Campaign for New Subscribers," by Frank T. Byrne, Commercial Superintendent of Rochester Telephone Co., Rochester, N. Y.
Reports of Committees. Election of Directors. General Business.

DIVISION CONFERENCES, WEDNESDAY, 2:00 P. M.

Commercial Division Conference—
Statement of Changes in Accounting System Proposed by the Bureau of Accounts of the Interstate Commerce Commission, by E. C. Towner, Auditor of Disbursements of Tri-State Telephone and Telegraph Co., St. Paul, Minnesota. General Discussion.

Commercial Division Conference—
Discussion of Development of Business Topics Presented at Morning General Session.

Plant Division Conference—
Report of Committee on Protection Against Lightning by Association's Representatives: W. L. Cook of Reliable Electric Company and John S. Baker of Cook Electric Company.
Report of Committee on American Standard Electrical Definitions by Association Representative: Dr. Arthur Bessey Smith of Automatic Electric, Inc.
"Teletypewriters," Explanation and Demonstration by A. S. Benjamin, Sales Engineer Teletype Corporation, Chicago, Illinois.

Traffic Division Conference—
Discussion of The Evolution of Toll Traffic Methods, Special Services and other topics by E. L. Gaines, A. C. Stewart and Ada Hoatman.

ANNUAL MEETING OF PIONEERS' ASSOCIATION, THURSDAY, OCTOBER 24, 10:00 A. M.

Business Session.
Address by Hon. Frederick A. Landis, Logansport, Indiana.
Annual Luncheon and Entertainment.

ANNUAL MEETING OF PROGRAM SERVICE DIVISION, FRIDAY, OCTOBER 25, 9:30 A. M.

Addresses and Discussions by J. A. Gustafson, A. L. Geiger, Ray Manson, O. G. Levy, R. S. Brewster and George R. Eaton.

system. Whether the system is of simple or elaborate design, both must provide for the accounting of certain fundamental operations which may be enumerated as follows:

1. Designation of plant items installed.
2. Allocation of material used.
3. Charging labor
   a. Plant additions.
   b. Plan retirements.
4. Plant removed or replaced.
5. Material salvaged.
6. Depreciation realized
   a. Charge to depreciation accrued.
   b. Charge to surplus or earnings.
7. Perpetual inventory of material and supplies.

After an intensive study of the facilities of a number of average-size telephone companies, the number of office clerks they employ, and the amount of time which could be devoted to the accurate maintenance of plant records, our organization devised the set of five principal forms illustrated to cover all of the necessary operations.

We have found systems in use which require as many as 20 different forms; the maintenance of such a system is obviously cumbersome for the smaller company and, therefore, tends to discourage the adoption of a system for recording the plant operations and activities of the company.

Even though the company's subscribers' records may balance perfectly, the cash account agree with all collections and disbursements, and all revenues recorded without error, no balance sheet or earnings statement is correct without properly accounting for the maintenance and extensions of its plant.

The most common error our study revealed was in charging the purchase of material. It seems to be a general practice among most telephone companies to charge the cost of material in accordance with its anticipated use. For instance, instead of charging the cost of material purchased to the warehouse and later crediting the warehouse and charging the appropriate account with the cost of the material as it is used from time to time, the invoice is charged to an expense or balance sheet account, or divided between the two in a speculative manner at the time it is recorded.

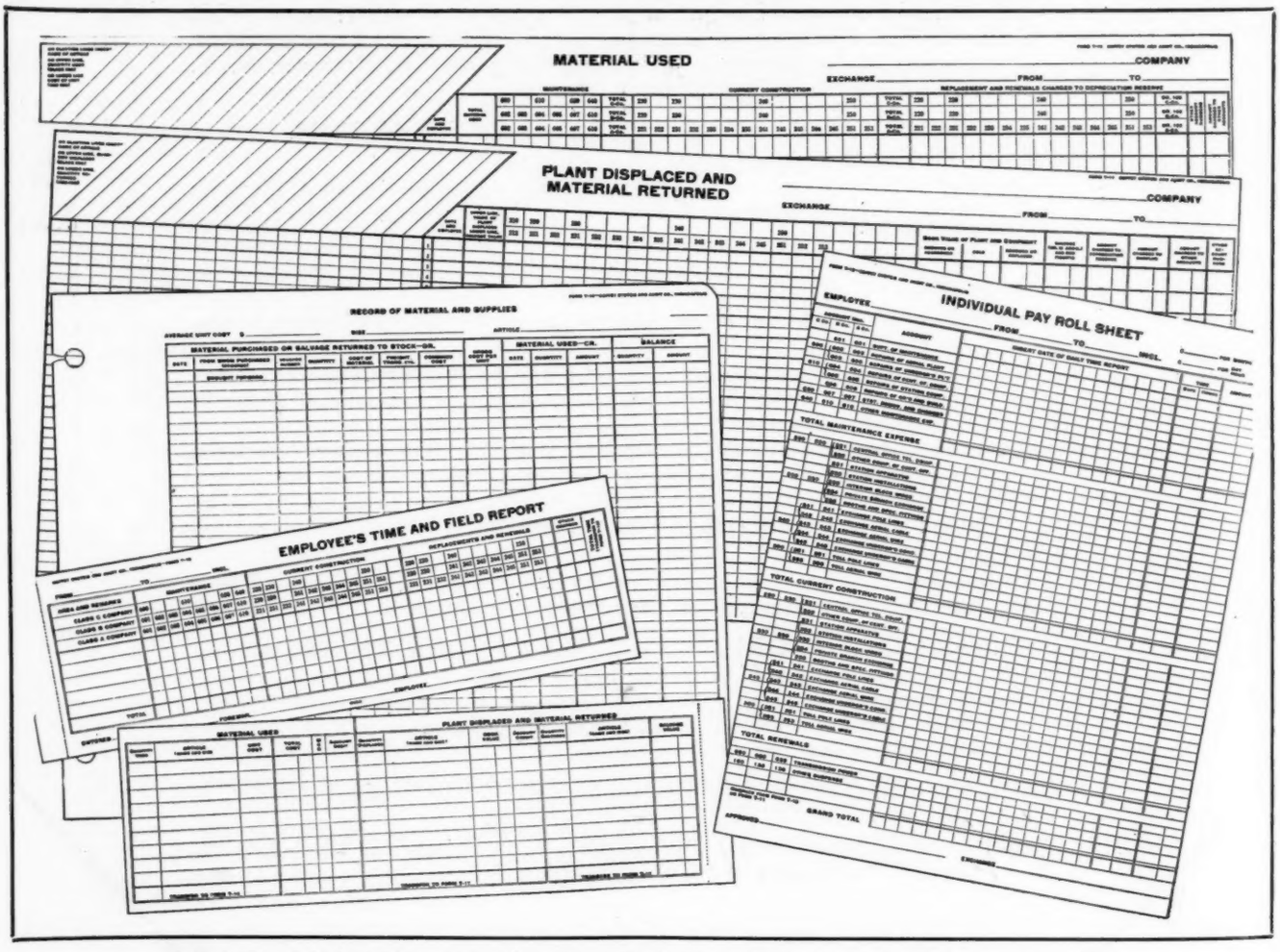
If the company is anticipating the extension of its plant, the material is charged to some plant account. If the company is anticipating the re-construction of certain items of its plant, the material is charged to depreciation or a depreciation reserve account. This method is not consistent with good accounting, and tends to greatly impair the authenticity of any balance sheet or earnings statement which may be issued.

During the past year, the books of one of the leading telephone companies in the west were audited. This was the first time the company had engaged professional auditors. Among the many inconsistencies found, this was the most glaring:

The company had purchased a quantity of material preparatory to an extensive construction program planned for the spring of the following year. Among the material was a car load of northern white cedar poles. At the time the invoice for the poles was recorded, the cost of the poles less the freight was charged to the exchange pole line account.

At the close of the year, the company's balance sheet showed a very large increase in the exchange pole line account. However, very few actual additions had been made to the lines during the year. All of the poles, crossarms, brackets, pins and other material needed for the coming extensions were in the warehouse, though the material and supplies account showed only a negligible increase over the preceding period.

During the early part of the following year, before the company commenced the construction of its new pole line, it suffered the loss of more than 100 poles


MATERIAL USED
PLANT DISPLACED AND MATERIAL RETURNED
RECORD OF MATERIAL AND SUPPLIES
INDIVIDUAL PAY ROLL SHEET
EMPLOYEE'S TIME AND FIELD REPORT
PLANT DISPLACED AND MATERIAL RETURNED

Set of Five Principal Plant Accounting Forms Designed to Cover All of the Necessary Operations.

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Telephone Batteries
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through a tornado. To replace the broken poles, it was necessary to use the poles originally intended for extension purposes.

Since the poles were charged at the time the invoice was recorded, no further entry was made to show that the poles were used for repairs instead of extensions to its plant. No entry was made to show that there was a realized amount of depreciation. Therefore, the depreciation reserve and surplus accounts remained intact. From the company's records, there was nothing to indicate that it had suffered a loss. Both the destroyed and new poles were carried as part of its plant, for no provision was made for retiring the old poles.

Such entries and errors are not uncommon, and, as a result, the balance sheets and earning statements issued by most telephone companies are innocently fictitious. The financial statement of a company is the barometer of its progress or retrogression, and it is too important an instrument to be made up of spurious figures. The accounting records of an organization are too valuable to be maintained in a perfunctory or speculative manner.

The telephone industry has expanded to such proportions that it is no longer a "one-man" industry. This is the day when specialists and supervisors are required for every operation; the rapid advancement made in every department can not be followed with success by one individual. The day when the operator was also bookkeeper, and the lineman the collector, is history for most telephone companies.

The progressive company is coming to the realization that an efficient organization necessitates the most modern and thorough methods of operation in every department, that the minor functions of its organization are of no less importance than its major functions. With this realization on the part of the larger telephone company, there is every indication for its continued progress, and the backward company will eventually find itself in a lone spot in this great competitive world.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Investigation of Communications Scheduled After Tariff Bill.

Resumption by the Senate interstate commerce committee of its sweeping investigation into the whole field of radio, telephone, telegraph and cable communication waits only on passage of the tariff bill by the Senate, according to late reports from Washington.

Chairman Couzens is ready to call a long list of witnesses, but is reticent as to their identity. A complete investigation, extending into the interstate transmission of electric power, is contemplated.

The committee undoubtedly, it is stated, will follow up testimony that a monopoly existed in the radio industry, which it received before the hearings were suspended last spring after examination of army, navy and civilian radio experts.

Next in order will come testimony on the telephone and telegraph phases of the inquiry, and then the Couzens proposal for federal control of interstate transmission of electrical power.

The committee will report after completing its inquiry on a bill by Mr. Couzens which would place all kinds of electrical communication under a new commission, superseding the Federal Radio Commission. The latter becomes only an appellate body after January 1 unless new legislation is enacted before then.

Indiana Commission Grants Commonwealth Company Rates.

The Commonwealth Telephone Corp., headed by Carl H. Mote of Indianapolis, obtained rate increases for its exchanges at Spiceland and Mays in an order approved October 4 by the Indiana Public Service Commission.

Objections by patrons in Spiceland for the company's request for a $53,000 rate valuation on the property, which they testified in the hearing was sold a few years ago for $20,000, were successful in preventing establishment of toll rates between Spiceland and Mays and those of the company in Greensboro, Kennard, Cadiz and New Lisbon.

Hearing of Associated Company in California Probe Continued.

Further hearing in the California Railroad Commission's investigation of rates and service of six suburban telephone systems operating under the Associated Telephone Co. as the parent body was continued on September 24 to December 3, following the opening testimony at Los Angeles of Arthur B. Fry, telephone and telegraph engineer of the commission.

Commissioner Leon Whitsell, before whom representatives of the companies had been summoned to testify, continued the hearing to give time for preparation of statements showing the total and rate of return for the current year.

Suburban cities affected in the investigation include Santa Monica, Redondo Beach, Long Beach, Laguna Beach, Huntington Beach, San Bernardino and Covina.

Louisiana Commission Readjusts Shreveport, La., Rates.

The order of the Louisiana Public Service Commission establishing a scale of exchange telephone rates for Shreveport and the territory served by the Shreveport exchange of the Southern Bell Telephone & Telegraph Co. was recently amended and modified by the establishment of a rate for business one-party telephones in the Shreveport base rate area of $6.50 per month, and for residence one-party lines of $3.15 per month.

It was also ordered that at the expiration of a period of 12 months from the effective date of the order, the Southern Bell company should file a statement of its telephone exchange operations at its Shreveport exchange, segregated as to the several classes of service there rendered, in order that the commission might, if necessary, further readjust local exchange rates in the Shreveport bases rate area.

The commission had pursued an independent study of the effect of its former order and the rates prescribed therein. This study led to the conclusion that some modification was necessary and desirable in the so-called primary business and residence rates. The schedule for direct-line business service fixed in the original order was $7.00 per month.

At the same time a class of service not heretofore available at Shreveport was provided for, this being a two-party business service, for which a rate of $5.50 per month was fixed. The commission was of the opinion that the spread between the two-party and the direct line rates was somewhat out of adjustment, and that it may be and probably would have the effect of causing a considerable amount of conversion, especially on the part of smaller business houses, to the lower rate service.

In a lesser, but appreciable degree, this same situation obtains with respect to the multi-party residence service. It was the observation and experience of the commission that multi-party lines do not provide satisfactorily a character of service as do straight one-party lines. Accordingly, after a full consideration of all factors, the commission thought it best to readjust these so-called primary business and residence rates, but reduce the rate on the one-party business lines from $7.00 to $6.50 per month, and on the one-party residence services from $3.25 to $3.15 per month.

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This readjustment will have the effect of reducing the rate of return on the company's operations in Shreveport below that which was found reasonable in the original order. Anticipating, however, a reasonable increase in the volume of business at Shreveport, because of the more varied classification of service available under the new schedules, the commission did not believe this readjustment would seriously impair the ability of the telephone company to earn a fair return on the value of its property.

The commission was also of the opinion that, as to present subscribers, the charges usually made by all telephone companies for changing the type of a subscriber's service should be waived for a reasonable period of time, due to the fact that the new schedule of rates fixed in the original order provided for a number of classes of service not now available, and it is probable, the commission stated, that a considerable number of subscribers will avail themselves of the lower rated types.

The commission was further of the opinion that the effective date of the new rates should be made not earlier than November 1, 1929, in order that all necessary readjustments might be made before the new rates become applicable. These two conditions likewise have the effect of materially shrinking the revenues which would have been earned by the company on the basis of the original order, but this condition will adjust itself in due course the commission believed.

Bell of Pennsylvania and Cumberland Valley Divide Territory.

The Pennsylvania Public Service Commission has been asked to approve an agreement between the Bell Telephone Co. of Pa. and the Cumberland Valley Telephone Co. for an exchange of property.

The agreement provides that the Cumberland Valley company will sell to the Bell company all of its property in the following exchanges: Harrisburg, Steeton, Middletown, Hummelstown, Mechanicsburg, Lewistown.

The Bell company will sell to the Cumberland Valley company its exchange plant and certain toll property in the following exchanges: Carlisle, Mt. Holy Springs, York Springs, Hanover, New Oxford, Gettysburg, Biglerville, Shippenburg, Littlestown, Waynesboro, Greencastle, Mercersburg, McConnellsburg, Newville, Chambersburg, Blue Ridge Summit, Fairfield.

Each company agrees to withdraw from furnishing local exchange service in the localities where its property is sold to the other company.

John T. Harris, vice-president and general manager of the Bell company, stated in Harrisburg that the object of the agreement is the elimination of telephone competition in the interest of the public, and under conditions favorable to all concerned.

The Cumberland Valley company, through Ralph Van Trine, executive vice-president, has announced that agreements had been entered into whereby the Cumberland Valley system and the Perry county system in Perry county, and the Cumberland Valley system and the Pfoutz's Valley system in Perry and Juniata counties, will be unified into a single system, subject to the approval of the Pennsylvania Public Service Commission, to be effective just as soon after such approval as rearrangement of plant can be made.

Law Relative to Closing of Exchanges Has Kick-back for Towns

Some years ago the Nebraska legislature, at the behest of small-town members, passed a law forbidding all telephone companies operating ten or more exchanges from abandoning any of them unless a consent petition be obtained from 60 per cent of the subscribers. While the law is, in the opinion of the lawyers, invalid because it seeks to distinguish between exchanges owned by the large companies and those owned by the smaller ones, the former have not found it worth while to contest it, since there has always remained for use the weapon of a rate sufficient to pay a return on the investment.

This law has now come to act in reverse. The Gage County Independent Telephone Co. operated for years an exchange at Blue Springs, a town of some 1,500 persons, located a mile from Wymore, a city of about 5,000, served by the Lincoln Telephone & Telegraph Co. They were rival railroad towns in the old days, and their municipal limits now touch.

A little while ago the Lincoln company bought the Blue Springs property, and then made preparations to abandon the exchange there, giving service from its newly-constructed exchange at Wymore. The Wymore exchange has had no rural stations, the Blue Springs company serving the 350 in that neighborhood along with nearly 200 town subscribers.

When the application was filed with the commission, it was accompanied by a petition signed by more than 60 per cent of the Blue Springs patrons. The others objected strenuously and at the hearing held attacked the validity of the signatures, which later they withdrew, but protested against losing the town's identity in this way.

Whereupon the commission ruled that as the legislature had seen fit to exercise its right to occupy the field of determination under what circumstances an exchange may be abandoned and having permitted it to be done when 60 per cent so petition, the commission could do nothing but order the wishes of the people carried out.

Under the law there was left for it to do nothing, after ascertaining if 60 per cent of the patrons had signed, except to make certain the service proposed would be sufficient and the rates reasonable. The testimony was that the service would be better, that more connections would be available, and freedom of service between residents of Blue Springs as unhampered as at present.

Bell Obtains Virginia Company In Spite of Intervention.

The acquisition by the Chesapeake & Potomac Telephone Co. of the properties of the Culpeper Telephone Co., with exchanges at Culpeper, Orange, Madison and Sperryville, Va., which collectively serve 1,901 subscriber stations and 94.5 pole miles of toll lines, was recently approved by the Interstate Commerce Commission. An intervening petition in opposition to the application was filed by the Piedmont Telephone Co.

The Piedmont Telephone Co., the commission found, owns and operates a telephone system at Charlottesville, about 55 miles southwest of Culpeper, which serves about 3,000 subscribers. It is controlled by the Southern States Utilities Co., which also controls telephone companies operating at Luray and Front Royal, Va., and in the vicinity of those places.

It desired to purchase the properties of the Culpeper company for the same price that the Chesapeake company agreed to pay. It feared that control of the properties by the Chesapeake company would result in a decrease of certain of its toll revenues. It claimed it was necessary to acquire the properties so that it could connect its system with those of other nearby Independent companies.

At the hearing, the president of the Piedmont company admitted that the purchase of the properties by that company would not give it connections with any companies with which it was not now connected, either directly or indirectly, but that it would provide connections with all the companies in this area over its own lines. He testified further that he did not believe such rearrangements would give any added benefit to telephone subscribers, but that it would be a better arrangement for his company.

A commitment was made by the Chesapeake company upon the record to the effect that if it acquired the properties, it proposed to continue all existing connections now maintained by the Culpeper company, on the basis of the standard traffic agreement in force throughout Virginia, any proposed change in such arrangements to be submitted to the Virginia commission.

With this understanding the president of the Piedmont company stated that his company would not be injured through the acquisition of the properties by the Chesapeake company.

On May 27, 1929, the Chesapeake company contracted to purchase all the proper-

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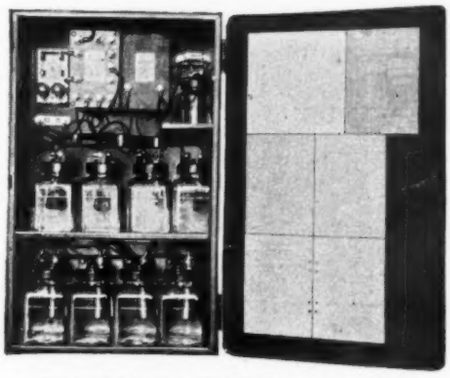

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ties of the Culpeper company, excepting material and supplies, cash on hand or in bank, securities, and accounts receivable, for $223,033.47, payable in cash.

An appraisal made by the chief engineer of the Chesapeake company found the reproduction costs new of the properties to be $289,943, and less depreciation $208,639. The estimated value of property to be retired from service is $5,826, and the cost of removing the retired property is expected to exceed its salvage value by $1,798. The Chesapeake company estimates that it would be necessary for it to expend $21,600 in rehabilitating the properties, of which $19,800 represents the cost of new plant.

In 1928, operating revenues and operating expenses of the Culpeper company were $47,872.42, and $36,550.40, respectively.

Boscobel (Wis.) Company Ordered to Extend Its Service.

In a recent decision of the Wisconsin Railroad Commission, the Boscobel Telephone Co. of Boscobel was ordered to extend its service in the towns of Marietta and Scott, Crawford county, Wis., to serve 25 former subscribers of the Crawford County Farmers Mutual Telephone Co. at a rate of $18 per year for party line metallic service.

The petitioners in this case were former members of the Marietta division and Pleasant Ridge division of the Crawford County Farmers Mutual Telephone Co., but the majority of their business and social activities are in the territory served by Boscobel company. Service was heretofore rendered over a connection between the lines of the two companies, but petitioners alleged that the service rendered was inadequate because of the failure of the Crawford company to operate and maintain the lines properly.

The commission found that public convenience and necessity required the extension of service of the Boscobel company to serve these subscribers, and ordered that the extension be completed within 60 days from the date of the order.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION

September 27: Chesapeake & Potomac Telephone Co. of Virginia authorized to acquire the properties of the Culpeper Telephone Co., which has exchanges at Culpeper, Orange, Madison and Sperryville, Va., serving 1,901 subscriber stations.

ALABAMA.

September 23: Sale of Wadley Telephone Co. and Wedowee Telephone Co. by S. L. Brewer to W. L. Fain approved. A new schedule of rates for Wedowee was also approved.

CALIFORNIA.

September 24: Opening hearing in commission's investigation of rates and service of the telephone systems operated by the Associated Telephone Co. Hearing continued to December 3.

October 24: Hearing before Examiner Williams at Bridgeport, Mono county, in the investigation instituted on the commission's own motion into the rates, tolls, rentals, charges, classifications, rules, regulations, practices, contracts, operations, compliance with general orders, service, or any of them, of A. S. Bryant, operating under the fictitious name of Bridgeport Telephone & Telegraph Co.

ILLINOIS.

October 9: Hearing at Springfield before Commissioner Gilbert in the matter of proposed advance rates for service of the Illinois Bell Telephone Co. in Mt. Vernon, Jefferson county, stated in rate schedule Ill. C. C. No. 2 filed by the company.

October 9: Hearing at Springfield before Commissioner Wilson in the matter of the proposed rules, regulations and conditions of the Hoopeston Telephone Co. in Hoopeston and vicinity, stated in rate schedule Ill. C. C. No. 2 Sheet 4 rendered by the company.

October 9: Hearing at Springfield before Commissioner Brinkman in the matter of the proposed advance in rates for service of the C. T. & N. Telephone Co. in Neoga, Cumberland county, stated in rate schedule Ill. C. C. No. 2 filed by the company.

October 9: Hearing at Springfield in the matter of the proposed advance in rates for toll service of the Deer Creek Telephone Co. in and from Deer Creek to Washington, Mackinaw and Morton, stated in rate schedule Ill. C. C. No. 2 filed by the Deer Creek Telephone Co.

October 10: Hearing at Springfield in the matter of the proposed advance in rates for service of the Lincoln Telephone Co. in Lincoln, Elkhart and New Holland, stated in rate schedule Ill. C. C. 4 filed by the Lincoln Telephone Co.

INDIANA.

October 4: Commonwealth Telephone Corp. granted application for rate increases at its Spiceland and Mays exchanges.

October 22: Hearing on the application of La Porte County Indiana Telephone Co. for increased rates before Commissioner Frank Singleton commencing on this date. Following the recent sale to the Associated Telephone Utilities Co. the commission took definite action toward hearing the application.

November 18: Hearing postponed from October 2 on the petition of the Decatur County Independent Telephone Co. for an increase in rates.

KANSAS.

September 30: Application filed by Boicourt Mutual Telephone Co. for permission to sell its plant and property at Boicourt to the Peoples Mutual Telephone Co. of LaCygne.

September 30: Application filed by Peoples Mutual Telephone Co. of LaCygne for a certificate of convenience and authority to transact the business of a telephone utility at Boicourt.

October 7: Hearing on application of Rolla Telephone Co. for permission to sell its plant and property at Rolla and Richfield to V. S. Bullard.

October 7: Hearing on application of V. S. Bullard for a certificate of convenience and authority to transact the business of a telephone utility at Rolla and Richfield.

October 7: Hearing on application filed by Hunter Telephone Co. for permission to sell its telephone plant and property at Hunter to H. C. Woodring.

October 7: Hearing on application of H. C. Woodring for a certificate of convenience and authority to transact the business of a telephone utility at Hunter.

October 7: Hearing in the matter of the application of the Portis Telephone & Electric Co. to sell its plant and property at Portis to the Central Kansas Telephone Co.

LOUISIANA.

September 12: Commission's order dated July 27, 1929, authorizing Southern Bell Telephone & Telegraph Co. to increase rates on its Shreveport exchange amended and modified as regards business and residence one-party rates with 60-day suspension of charge for changing from one type of service to another. With these modifications original order is affirmed and ordered effective November 1.

MICHIGAN.

September 26: Hearing held on application of the Michigan Associated Telephone Co. for an increase in rates at Blissfield and in Tecumseh, Reading, Dundee, Edwardsburg and Union.

MINNESOTA.

October 31: Hearing at Lake Park in the matter of the application of the Lake Park Telephone Co. for authority to change its schedule of rates.

MISSOURI.

September 30: City of St. Louis, through J. T. Meunch, city counsellor, appealed the ruling of the commission of July 18, 1929, that authorized the charge of 25 cents a month on dial telephones in private branch exchanges in St. Louis to the Cole county circuit court, contending the charge to be illegal and the commission was in error. The Southwestern Bell Telephone Co. of Kansas City, according to the commission, has made a like charge of 25 cents a month on PBX instruments for the last ten years without complaint from the city.

October 1: Application filed by Southwestern Bell Telephone Co. for increase in rates for fraternity houses in Kirksville, a college town, from their present classification as "residence" to "business." In support of the proposed change the Bell company states that there is ten to one more use of telephones in fraternity houses than in residence. The proposed increase will be suspended pending a hearing and investigation.

October 18: Hearing at Jefferson City on application of Middle States Utilities Co. for permission to file amended rate schedule and collection rules at Hamilton.

October 22: Rehearing at Kahoka on protest against Central West Missouri Telephone Co. and the Middle States Utilities Co. to the removal of switchboard at St. Patrick.

NEBRASKA.

October 1: In the matter of the application of the Nebraska Central Telephone Co. for authority to increase rates at its Arcadia exchange, wherein a consent petition has been filed by a majority of the patrons affected, ordered that the new schedule of rates be authorized to become effective when the conditions of the agreement with respect to improved service are complied with; no hearing held to be necessary.

October 1: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to abandon exchange at Blue Springs; hearing held, evidence adduced and matter taken under advisement.

October 3: Application filed by the Lincoln Telephone & Telegraph Co. for authority to offer at all of its exchanges a one-way business service at a rate to be computed on the basis of the existing single-line business service rate at each of the exchanges, in response to a demand that has become quite general.

October 3: Application filed by the Lin-

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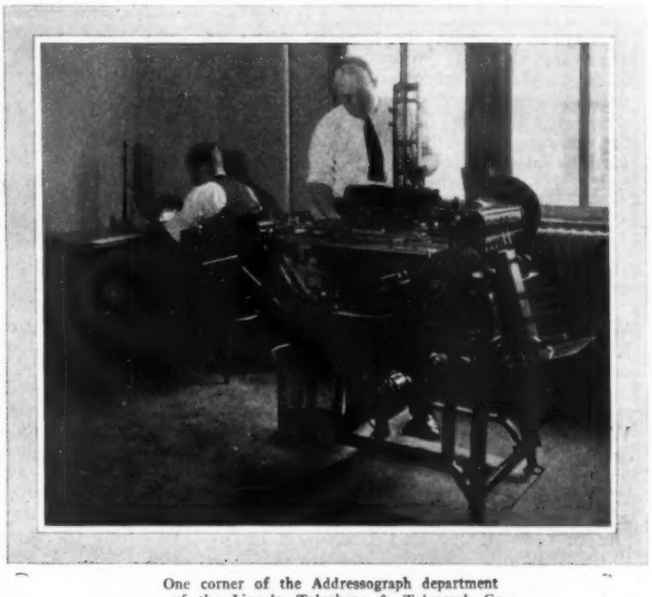

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coln Telephone & Telegraph Co. for authority to increase its metallic rate for rural service at its Hebron exchange from $1.50 to $1.75 a month, accompanied by a petition signed by 87 per cent of the persons affected, on condition that the lines be rearranged so that not more than ten stations are placed on any one line and that service be otherwise improved.

NORTH DAKOTA.

September 11: Red River Valley Telephone Co. filed application for readjustment of toll rates.

September 17: Application granted of Williams County Mutual Telephone Co., Ray, for authority to issue six shares of common stock.

September 20: Authority to issue six shares of common stock granted to the Williams County Mutual Telephone Co., of Ray.

September 21: Authority granted the Williams County Mutual Telephone Co. of Ray to build 4½ miles of telephone line in New Home and Champion townships, Williams county.

September 21: Application granted of First Farmers Telephone Association of Lansford for authority to dismantle one-half mile of telephone line running along the Soo Line right-of-way, east and west; and to build three-quarters of a mile of line along the east side of Section 29, Lewis township.

September 26: Northwestern Bell Telephone Co. filed first revised local exchange tariff for Steele.

OHIO.

October 4: Home Telephone Co. of Portsmouth authorized to close the exchange at Cynthiana, near Waverly. The exchange is closed on condition that the company furnish party-line service through the Sinking Springs exchange.

OKLAHOMA.

September 26: Purchase authorized of Southwestern Bell Telephone Co. exchange at Medford by James Thompson, owner of the Medford Telephone Co. exchange and approval given these monthly rates at Medford when the merger becomes effective: One-party business, $3.50; business extension, $1; one-party residence, $2.00; two-party residence, $1.50; rural line switching rate, $.50. The rate schedule is approved conditional upon the filing by Mr. Thompson within 120 days from placing the schedule in force, a statement showing his investment in exchange property at Medford together with a statement of revenues and expenses.

October 8: Hearing on the cause of the Southwestern Bell Telephone Co. vs. the Continental Telephone Co. alleging violation of commission order Nos. 912 and 1668.

October 15: Hearing in the matter of application by the Ketchum Hotel vs. the Southwestern Bell Telephone Co. to install its own P. B. X. board and fix rates for trunk lines, also general hearing and investigation in the matter of fixing rates and regulations for telephone service in Oklahoma.

PENNSYLVANIA.

September 24: Applications filed asking approval of exchange of telephone systems to eliminate competition in the Cumberland Valley by the Bell Telephone of Pa. and the Cumberland Valley Telephone Co. The Bell company, according to the agreement submitted to the commission for ratification, proposes to buy the Cumberland exchanges in Harrisburg, Steelton, Middletown, Hummelstown, Mechanicsburg and Lewistown. The Bell company will sell to the Cumberland Valley company its exchange plant and certain toll property in the following exchanges: Carlisle, Mt. Holly Springs, York Springs, Hanover, New Oxford, Gettysburg, Biglerville, Shippensburg, Littlestown, Waynesboro, Greencastle, Mercersburg, McConnellsburg, Newville, Chambersburg, Blue Ridge Summit, Fairfield.

SOUTH CAROLINA.

October 2: Hearing held at Columbia in the matter of the proposed changes in long distance rates of the Southern Bell Telephone & Telegraph Co. The company proposes to increase tolls on short calls—from 30 to 100 miles from 5 cents up to 15 cents per call. Over 100 miles there would be a decrease in rates on a sliding scale of decreases. The proposition also has to do with reversing station-to-station calls.

WISCONSIN.

October 4: Hearing in the matter of necessity for an extension of telephone service from the Waupun exchange of the Wisconsin Telephone Co. to include the farms of A. J. Chapin, F. H. Brinkerhoff and Charles Pollock.

October 11: Hearing at Monroe on the application of the Brodhead Telephone Co. of Brodhead for authority to increase its rates.

October 16: Hearing at Hager City in the matter of the proposed extension of the Hager City Telephone Co. to extend its line to Gilbert Thonner in Section 26 of the town of Trimbelle, Pierce county.

October 16: Hearing at Hager City on the application of Hager City Telephone Co. for authority to increase rates.

October 17: Hearing at Nelson on the application of Nelson Farmers Telephone Co. for authority to increase rates.

October 22: Hearing at Madison on the application of Long Lake Telephone Co. to charge toll to all non-stockholders except subscribers of Bashaw Telephone Co. directly connected to switch at Sarona.

October 22: Hearing at Madison on the application of the Bashaw Valley Telephone Co. to establish toll rates between Sarona and Shell Lake.

October 24: Hearing at Waupaca on the application of Ogdensburg Telephone Co. of Ogdensburg for authority to increase its rates.

October 25: Hearing at Thorp on the investigation on motion of the commission of the practice of Thorp Telephone Co. of Thorp with reference to handling toll messages and to charges for same.

October 29: Hearing at Oconomowoc on the application of Wisconsin Telephone Co. for authority to revise its rates at its Oconomowoc exchange.

October 30: Hearing at Pewaukee on the application of Wisconsin Telephone Co. for authority to revise its rates at its Pewaukee exchange.

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Condensed Telephone News

Companies Are Urgently Requested to Forward to Us Promptly News Concerning Construction, Rebuilding, Financing, Election of Officers, Sales and Purchases of Exchanges or Other Activities

New Incorporations and New Telephone Companies.

NAPPANEE, IND.—Articles of reorganization have been filed with the secretary of state in Indianapolis by the Nappanee Telephone Co. of Nappanee. The corporation lists an initial capital stock of 1,000 shares having no par value and is formed to conduct a telephone business. The first board of directors is composed of Claude R. Stoops, John T. S. Stoops and LeMar Stoops.

Franchises.

MONMOUTH, ILL.—Years of endeavor in improving Monmouth's telephone system bore fruit recently when the council, without a word of dissent, voted to grant a 20-year franchise to the Illinois Northern Telephone Co. The old permit expired last February and the new ordinance had been in preparation since that time. The ordinance closely resembles that under which the company had been operating as the successor to the old Monmouth Telephone Co.

STUART, IOWA.—The voters of Stuart recently ratified the action of the city council in giving a 25-year franchise to the Northwestern Bell Telephone Co. The vote was overwhelmingly in favor of granting the franchise, 436 voting in its favor and 19 against. The granting of the franchise will undoubtedly mean that the telephone company will proceed with its plans of constructing a new building here for its business.

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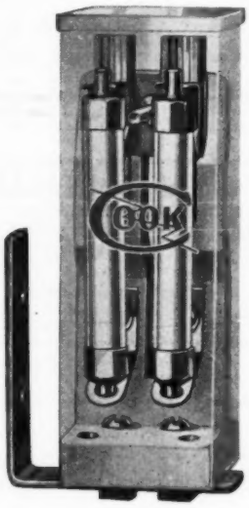

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DIVIDEND NOTICE

The Board of Directors of National Telephone & Telegraph Corporation has declared the regular dividend of $1.75 per share on the First Preferred stock and 88c per share on the Class "A" stock for the quarter ending October 31st, 1929, payable November 1st, 1929, to stockholders of record at the close of business October 17th, 1929.

G. L. GRAWOLS,
Treasurer.

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Elections.

NORTH ENGLISH, IOWA.—At the annual meeting of the North English Mutual Telephone Co. held recently the following officers were elected: President, Frank Wallace; vice-president, O. G. Lown; secretary, W. M. Geiger; treasurer, S. S. Swain. E. L. Graham and Henry Norling will succeed Gene Welch and Elmer Miller as directors.

Construction.

SHIRLEY, IND.—On account of high tension lines of 14,000 volts being built along the highways north of Shirley from Kennard to Warrington and Willow Branch, the Commonwealth Telephone Co. is reconstructing and making all of its lines north of Shirley metallic and doing away with the grounded service in order to give subscribers better service.

Cable will be strung from Shirley to the Lafe Coon corner. This will eliminate the heavy lead north of town. The ma-

Statement of the ownership, management, circulation, etc., required by the act of Congress of August 24, 1912, of TELEPHONY, published weekly at Chicago, Ill., for October 1, 1929.

State of Illinois, County of Cook, ss.—Before me, a notary public in and for the state and county aforesaid, personally appeared S. R. Edwards, who, having been duly sworn according to law, deposes and says that he is the editor of TELEPHONY, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, embodied in section 411, postal laws and regulations, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, Telephony Publishing Corp., 608 S. Dearborn St., Chicago, Ill.

Editor, S. R. Edwards, 608 S. Dearborn St., Chicago, Ill.

Managing editor, S. R. Edwards, 608 S. Dearborn St., Chicago, Ill.

Business manager, H. D. Fargo, Sr., 608 S. Dearborn St., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)—H. D. Fargo, Sr., 608 S. Dearborn St., Chicago, Ill.; S. R. Edwards, 608 S. Dearborn St., Chicago, Ill.; H. D. Fargo, Jr., 608 S. Dearborn St., Chicago, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state)—H. D. Fargo, Sr., 608 S. Dearborn St., Chicago, Ill.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

S. R. EDWARDS.

Sworn to and subscribed before me this 28th day of September, 1929.

(Seal) JULIA C. O'BRIEN.

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The company is rushing this work along in order that the lines will be made metallic before the high tension line is connected up. When these lines are completed the subscribers can have any class of service they desire in the rural district other than a private line.

COUNCIL GROVE, KANSAS.—J. W. Admire, superintendent of the lines for the Council Grove Mutual Telephone Co., has three crews of men working on improvements for the company service. Underground cable is being laid in East Council Grove and overhead trunk line work is being done toward Kelso.

NEW YORK, N. Y.—J. S. McCulloh, president of the New York Telephone Co., has announced that the board of directors at its meeting held late last month authorized the additional expenditure of $9,406,790 for new construction in the various parts of the territory served by the company. This brings the total amount appropriated for this purpose since January 1 to $85,579,457 of which $74,682,325 has been set aside for enlargement of facilities in the New York metropolitan district.

Miscellaneous.

FREEPORT, ILL.—The Northwest Telephone Co. is completing negotiations which will merge the exchanges at Polo, Coleta, Pearl City, Pitcher and Lancaster-Cedarville, under its management. Arrangements for the purchase of all capital stock and assets of the individual companies will be finished soon. The Pitcher exchange serves 17 communities in Jo Daviess county and the Pearl City exchange controls the Lena system also. The Northwest Telephone Co. was recently granted a charter of incorporation with George X. Cannon. Dr. Charles L. Best and W. A. Hance, all of this city, as incorporators. Completion of the deal and transfer of the properties involved in the merger are expected to be made at a meeting on October 28.

WINCHESTER, IND.—The Eastern Indiana Telephone Co. is preparing to install a program service system in this city. The latest type Stromberg-Carlson equipment has been purchased and the table or wall-type speakers will be used. The speakers will be rented to subscribers just as the telephones are. The company has arranged with WLW of Cincinnati to receive its service and the hook-ups. Microphones have been purchased so that local events may be broadcast to the chain of speakers.

WHEATLAND, IOWA—Miss Emma Copp and Miss Bertha Copp, operators of the Farmers & Business Men's Mutual Telephone Co., handed in their resignations, which were effective October 1. Miss Emma Copp as chief operator and her sister as assistant have had charge of the office here for 24 years.

THAYER, MO.—The telephone systems at Thayer and Alton have been sold to the Ozarks Central Telephone Co.

TROY, PA.—Directors of the Citizens' Mutual Telephone & Telegraph Co. held a banquet at the Troy Hotel recently. Those present were: W. H. Hatfield, Paul Harvey, J. N. Hatfield, Tioga; W. H. Boughton, H. P. Hulslander, G. W. Woodworth, Troy; W. H. Horning, Columbia Cross Roads; E. J. Kennedy, Troy; Rollin Soper, Minor Cook, T. J. White, Rutland; T. B. Mulslander, Mansfield; J. C. Greening, Ulster; W. J. Smith, Millerton; J. A. Healy, Buffalo; D. F. Pearce, Elmira; H. M. Varney, Spediker; J. G. March, Wellsboro.

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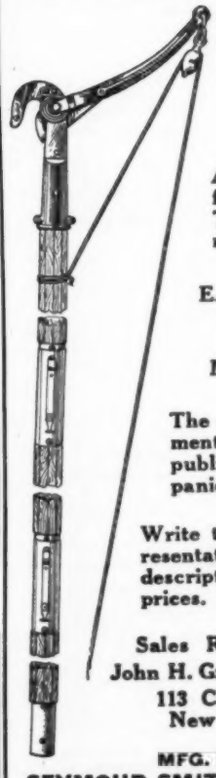

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Kellogg drop coils, 100 ohm 35c ea., 500 ohm 45c ea., 1000 ohm	.55
Dean 3-bar 1000 or 1600 ohm Bdg. desk set with inside connection signal set @ $9.00—4-bar $9.50—5-bar @	10.00
Kellogg No. 28 3-bar 1000 or 1600 ohm Bdg. desk set with inside connection signal set @ $10.00—4-bar $10.75—5-bar @	11.50
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